The Cavendish Lecture

ON

DREAMY MENTAL STATES.

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MR. PRESIDENT AND GENTLEMEN,—I have first to thank you for the honouring invitation conveyed by your council to deliver this Cavendish Lecture—an annual discourse established, I understand, to perpetuate the memory of the noble and benevolent peer by whom the West London Hospital was founded, but the title of which also recalls another scion of the same house—that great, silent, sagacious Henry Cavendish—who a hundred years ago helped to found that natural philosophy to which modern medicine owes so much, and one of whose experiments actually foreshadowed our most recent scientific triumph—I mean the discovery of argon. But while thanking you for your invitation I cannot but feel that there was perhaps some rashness in my acceptance of it, for, confined as I now am to the narrow precincts of officialism and without command of clinical material, I am scarcely entitled to follow in the footsteps of those who have hitherto addressed you from this chair, who have always had practical aims in view, and have communicated to you the fruits of their own experience in such a manner as to be immediately serviceable in your professional work. But medicine is many-sided and touches, or is touched by, almost all human affairs, and it occurred to me that I might not unprofitably conduct you this evening into a bypath of pathology, and ask you to leave the bedside for a little and consider with me certain mental conditions that are encountered in daily life that have a literary and philosophical interest, and that are not, I believe, without great medical significance. I have therefore culled from the faded leaves of an old notebook some observations on curious, fleeting, but elaborate psychical modifications, which have been designated "dreamy mental states," also "voluminous mental states," likewise "intellectual aura," and which have not yet received in this country the amount of attention they deserve. Now, the simplest form of these dreamy mental states—a sense of reminiscence it has been called by some, a sense of prescience by others, and the application to it of such apparently contradictory names suggests that it is somewhat mysterious in nature and difficult of interpretation—is to be found described vaguely, but recognisably, in the works of many of our most gifted writers. It consists in an impression suddenly taking possession of the mind that the passing moment of life has been once lived before or must be once lived again—that surrounding objects have been seen once before exactly in the relations in which they at the instant present themselves. "How often," says Sir Walter Scott in "Guy Mannering"—"how often do we find ourselves in society which we have never before met, and yet feel impressed with a mysterious, ill-defined consciousness that neither the scene nor the subject is entirely new; nay, we feel as if we could anticipate that part of the conversation that has not yet taken place." "We have all some experience," says Charles Dickens in "David Copperfield," "of a feeling which comes over us occasionally of what we are saying or doing having been done in a remote time, of our having been surrounded dim ages ago by the same faces, objects, and circumstances—of our knowing perfectly well what will be said next, as if we suddenly remembered it." Rossetti says in "Sudden Light":

> "I have been here before,
> But when or how I cannot tell:
> I know the grass beyond the door,
> The keen, sweet smell,
> The sighing sound, the lights around the shore.
>
> "You have been mine before—
> How long ago I may not know:
> But just when at that swallow's soar
> Your neck turned so,
> Some veil did fall—I know it all of yore."

Edward Dowden says:

> "There is a murmur in my heart I hear,
> Faint, oh! so faint, some air I used to sing,
> It stirs my sense, and odours dim and dear
> The meadow breezes bring.
>
> "Just this way did the quiet twilight fade
> Over the fields and happy homes of men,
> While one bird sang as now, piercing the shade,
> Long since, I know not when."

Without multiplying illustrations of this simple, dreamy mental state as experienced by masters of the literary craft, I would point out that almost invariably when these masters have attempted to explain it or have speculated as to its origin, they have regarded it as a vestige of a previous state of existence, as an echo from a life anterior to the present one. The thought that is of the essence of the state is transient and vanishes before it can be grasped; it is often connected with circumstances of the most commonplace or trivial description—Oliver Wendell Holmes says it used to occur to a poor student when he was blacking his boots—and yet it startles as if it were a flash of revelation, and leaves behind it a sense of solemnity and doubt. Those who are visited by it know well that it is no ordinary reminiscence, no error of memory, no mere poetical fancy, but an absolute identification of the present with the past; and it is little wonder that they should translate the perplexity which accompanies it into ghostly glamour and trace it back to prehistoric times.

> "Our birth is but a sleep and a forgetting:
> The soul that rises with us, our life's star,
> Hath had elsewhere its setting,
> And cometh from afar;
> Not in entire forgetfulness,
> And not in utter nakedness,
> But trailing clouds of glory do we come
> From God Who is our home."

Thus Wordsworth wrote, and it is to the cloudy remnants, which may, according to him, be detected in infancy, that dreamy states in adults have been most commonly referred. Coleridge, who was very subject to dreamy states of all sorts and sizes, seems to have been disposed to take this view of their hidden meaning, for he said:

> "Oft o'er my brain does that strange fancy roll,
> Which makes the present, while the flash doth last,
> Seem a mere semblance of some unknown past
> Mixed with such feelings as perplex the soul
> Self-questioned in its sleep; and some have said
> We lived ere yet this robe of flesh we wore."

And Russell Lowell was evidently of the same way of thinking, for he said:

> "And now sometimes we seem to find,
> In a dark crevice of the mind,
> Some relic which, long pond'red o'er
> Hints faintly at a life before."

Coventry Patmore, too, dealing with the same topic, arrives at the same conclusion, set forth in these words:

> "At times some link of harmony seems missing, and we anon
> Remember states long ended ere we left the womb,
> And see an awful something flashing to us from the tomb,
> The zodiac light of new states dashed tremendously with gloom,
> We tremble for an instant, and a single instant more
> Brings absolute oblivion, and we push on as before."

It is not at all improbable that the doctrine of human pre-existence owed its origin to unaccountable reminiscences of the kind alluded to in the passages quoted. To imaginative minds in superstitious ages they may have seemed to afford glimpses of real insight into an otherwise impenetrable past, and even to matter-of-fact minds at the present day it must be admitted they sometimes bring with them convictions of metempsychosis which it is difficult to shake off. But with the transcendental aspects of these reminiscences or dreamy mental states we are not here concerned. It is ours to deal with them from a purely medical point of view, and so we must regard them, not as intimations of immortality, but as revivals of hereditarily transmitted or acquired states in new and special combinations.

Dreamy states, as I have already remarked, have been experienced and recorded by many of our most eminent writers, and as regards their general prevalence it has been assumed that they are a universal human experience. Dickens says we have all had them, and the usual introduction to any description of them is that they are a feeling with which everybody is familiar. "Everybody is familiar," says Thomas Hardy in "A Pair of Blue Eyes," "with those strange sensations we sometimes have that our life for the moment exists in duplicate, that we have lived through that moment before

or shall again." No doubt these dreamy states are very common amongst us at the present day, but it will, I am sure, be found on inquiry that they are by no means all-embracing, and that while they abound amongst the educated, the refined, and the neurotic classes, they are comparatively rare amongst the unlettered, the prosaic, and the stolid masses of our people. The difficulty of getting information about them is considerable, for those who have experienced them generally manifest a disinclination to talk about them, from a not unwarrantable suspicion that they are somehow morbid in their nature; and those who have not experienced them cannot comprehend what is meant by them, and often treat questions bearing on them with a levity like that of the young American, who, when interrogated respecting them, replied that he never lighted a cigar without the deepest conviction that he had done the very same thing not once, but many times before. Still, a little careful investigation as to their distribution will, I am satisfied, conduct to the conclusion that dreamy mental states, although widespread, are by no means universal and cannot with propriety be called normal phenomena. The fact is that they emerge only at a certain state of mental evolution, rarely occurring in a child under eight years of age or in a man or woman of less than average mental development, and are not themselves a part of the evolutionary process, but one of the accidents by which it is attended. They do not present themselves before that stage of intellectual growth at which the capability of entertaining abstract ideas is attained, and they find no place in a scheme of natural and organic mental expansion, but are an interference with the chiaroscuro of perfect mental health, and the first step in a series of changes which, extending through many degrees of mental dissolution, ends in complete coma or obliteration of mind. I shall hope to show that these dreamy states, so far from being normal even in their slightest and simplest form and occurring in presumably healthy persons, involve disorder of mind, trifling and transitory no doubt, like cramp in a few fibres of a muscle, but disorder nevertheless dependent on a defect of consciousness in one direction, indicated by vagueness as to present surroundings, and an increase of consciousness in another direction, indicated by the too vivid revival of former surroundings. There is in them a negative element in the loss of control of the highest centres and a positive element in the raised activity of other nervous arrangements, permitting of new cerebral combinations somewhat akin to those which take place during the activity of the imagination and flights of genius. If the sense of beauty is vision raised to a higher power, a dreamy mental state is memory diving to a lower than its accustomed level and bringing to the surface deeply submerged personal annals, or even still more unfathomable ancestral traits. A dreamy state it may be conveniently called, and dreamy in some aspects it undoubtedly is, and yet, strictly speaking, it is not comparable to a dream, for it involves a residuum of object consciousness larger than a dream contains and a volume of subject consciousness to which a dream rarely reaches. It has peculiar features of its own and stands in the same relation to a dream that the darkness of an eclipse does to the more frequently recurring darkness of night.

I have hitherto spoken of dreamy mental states of the most ordinary and uncomplicated type—those that are least removed from normality and consist in reminiscence; but it must be pointed out that such states are of many different kinds and that those that commence in reminiscence sometimes branch out into more elaborate manifestations. They have not yet been classified, and this is to be regretted, for the accurate observation and arrangement of them would in all likelihood throw much light on their nature and almost certainly reveal that, notwithstanding their diversities, they often closely resemble each other as occurring in different individuals, and fall into several groups corresponding probably with disorder of several different cerebral areas. As yet, however, all we can do is to enumerate some of their characteristics and varieties. The most general description of them is that they are indescribable and transcend all common experience, and the crudest analysis discloses this much—that they consist in an exaltation of subject consciousness and a degradation of the power of attention for the time being, and are almost invariably concerned, however vaguely, with those ultimate scientific ideas—space, time, matter, motion, force, and the like—which are beyond the domain of certain knowledge, and, according to Herbert Spencer, unthinkable. Contrary to all experience, they have yet apparently the highest experiential validity. They declare themselves now as tamperings with those intuitions that yield the consciousness of continued existence, and again as excursions into that infinite field that lies behind appearances and of which it is dangerous to affirm or deny anything. Plunges they are into these depths of outer mystery in which the certitudes of science lose themselves and out of which, it has been said, the certitudes of faith arise. Momentary realisations they become of Nirvana or the cessation of being, or foretastes of purgatorial pains more searching than any that Dante conceived. "Dream not, Coleridge," Charles Lamb wrote, "of having tasted the grandeur and wildness of fancy till you have gone mad." "Think not, Lamb," Coleridge might have replied, "of having touched the skirts of immensity and mystery until you have had a dreamy mental state." The victims of dreamy mental states, striving to convey some notion of them, tell us that they consist in a feeling of being somewhere else—in double consciousness—in a loss of personal identity—in a going back to childhood—in the vivid return of an old dream—in losing touch of the world—in a deprivation of corporeal substance—in a loss of a sense of proportion—in momentary black despair—in being at the Day of Judgment; and they supplement whatever phrases they use with the assurance that it is impossible to put into words such strange and incomprehensible visitations.

That dreamy mental states, even of the most familiar type—those, I mean, which consist in reading into the present some version of the past—are abnormal in their essence and morbid in their tendencies may, I think, be demonstrated by a study of their transitions, their associations, their congeneric conditions, and their consequences. As represented to us in literature, these simple dreamy states are occasionally linked with other mental states akin to them, but of a more pronounced pathological character. In Tennyson's writings, for example, we have several references, that are not all obscure, to what may be termed the ordinary dreamy mental state. In "The Two Voices" he sings:

> "Moreover, something is or seems,
> That touches me with mystic gleams,
> Like glimpses of forgotten dreams—
>
> "Of something felt, like something here;
> Of something done, I know not where;
> Such as no language may declare."

And in the "Early Sonnets" he thus delivers himself:

> "As when with downcast eyes we muse and brood,
> And ebb into a former life, or seem
> To lapse far back in some confused dream
> To states of mystical similitude;
> If one but speaks or hems or stirs his chair,
> Ever the wonder waxeth more and more,
> So that we say, 'All this hath been before,
> All this has been I know not when or where.'"

But in Tennyson's writings we have also references to other mental states which have about them quite as convincing a ring of personal knowledge, and the morbidity of which cannot be questioned. Thus in "The Princess" we are told that the hero, who belonged to a race haunted by a hereditary nervous affection, was himself afflicted by—

> "Weird seizures, Heaven knows what:
> On a sudden in the midst of men and day,
> And while I walked and talked as heretofore,
> I seemed to move among a world of ghosts,
> And feel myself the shadow of a dream."

In these words it is not difficult to recognise an outline of *petit mal*, and Tennyson himself names these seizures epilepsy, and we have, therefore, in his poetical biography appreciations of a simple dreamy mental state and of the epileptic state, of which these dreamy mental states are so often the prelude or accompaniment. In Tennyson's poems these two states are not brought into immediate relation, but in our professional experience it is no uncommon thing to find the one state signalising the onset of the other or alternating with it; and it is no uncommon thing for us to observe that with or without some subjective sensational warning of an approaching epileptic fit there arises a dreamy mental state, which in that connexion has been designated an intellectual aura. It is not suggested that the dreamy mental state under such circumstances is directly due to the epileptic discharge, but there are grounds for holding that it depends on the heightened activity and increased energising of nervous arrangements intimately linked with those in which the true epileptic discharge begins. A truly epileptic or sudden and excessive discharge of the highest nervous arrangements results, not in ideas however vague, but in the negation of thought or loss of consciousness, and ideas properly so

called attend the excitation and not the explosive discharge of these arrangements. Intellectual auræ or dreamy mental states are, therefore, precursors and not integral parts of epileptic fits. A medical man who, five-and-twenty years ago, contributed to the *Practitioner* an interesting memoir of his own case, said that he had suffered from boyhood from dreamy mental states of reminiscence, or a startling conviction that he had once before been placed in the exact circumstances in which he found himself, and that immediately before his first epileptic fit, which occurred in middle life, these dreamy states recurred with unusual frequency and intensity. "Since my first attack," he went on, "I have only had few recurrences of the feeling, but on two occasions these were followed the next day by an epileptic seizure." One patient of Dr. Hughlings Jackson reported that his fits began by "a sort of referring to old things that have happened," after which he lost himself; another intimated that old scenes reverted for hours before a fit; another said, "If I were walking along and had a fit I should think, 'Oh! I saw that before'"; and a patient of my own, before each fit—and his fits were marked by violent convulsions and tongue-biting—had a similar impression accompanied by intense terror and alarm. Dr. Joseph Coats of Glasgow has narrated the case of an intelligent man who stated that with few exceptions his fits had been preceded by giddiness and "a peculiar "thought," as he expressed it. He attached great importance to this 'thought,' saying that if it were known his whole case would be explained, and although he could not tell what the thought was he was confident that it was always the same. He always recognised it when it occurred, and tried to fix it in his memory, but he invariably forgot it when the fit was over. Now this case recorded by Dr. Coats, and another case in which "a dreadful queer feeling" gave notice of fits when they first commenced, but was gradually lost as they became confirmed and severe, suggest that dreamy mental states perhaps prelude epileptic fits more frequently than the testimony of those who suffer from such fits would lead us to suppose, for it is undoubtedly true that when consciousness is suddenly interrupted there is often obliteration of the records of conscious experience for a period, longer or shorter, before the exact moment at which the interruption occurred. The impressions received, the ideas developed on the sensitive plate of the brain, can only apparently be fixed there so as to be capable of reproduction while conscious activity is maintained, and an abrupt cessation of brain function not only arrests sensation and perception, but prevents the due registration of some sensations and perceptions that have taken place immediately prior to the break in the chain of conscious life. The blackness of insensibility casts a dark shadow behind it. In cases of concussion or injury of the brain inducing coma we frequently find that there is after recovery a mental blank as to incidents that occurred some time before the accident, and in cases of epileptic seizure it may sometimes be demonstrated that events occurring a few minutes before the actual invasion of the fit or of any premonitory symptom of it, at a time when the intellect was clear and conduct rational, cannot by any effort be recalled after the fit is over. It may well be, therefore, that mental experiences in juxtaposition to the fit—and constituting, indeed, its initial symptom or warning—are irrecoverable in memory, and so the assurances of persons subject to dreamy states and epileptic fits, that the former do not usher in the latter, cannot be received as trustworthy. The late Professor Laycock of Edinburgh recorded a case of epilepsy in which the paroxysms were inaugurated by a peculiar cry, a cry which, however, came sometimes independently as a false alarm, not being followed by unconsciousness or convulsions, and whenever that cry came alone the man was aware of it and discussed it afterwards, wondering what it meant; but when it was followed by a fit he had no after knowledge of it, and denied its having been emitted; no permanent record of it had been made. And just as with that cry, dreamy states, dread thoughts, or emotions of terror, which when standing alone can be remembered, may be, when linked with a fit irretrievably blotted out. The frequency with which a cry begins an epileptic fit might perhaps be regarded as some indication of the frequency of dreamy states at that juncture, for the cry is mostly strongly suggestive of acute mental trouble, and is probably, in some cases at any rate, determined by a feeling of fear present at the moment, but not subsequently recollected, and it is not to be lost sight of, in this connexion, that a sudden fright is believed to be one of the most common exciting causes of epilepsy.

But whatever may be the frequency of dreamy mental states as psychical auræ in epilepsy, I feel satisfied that the risks attending them in connexion with epilepsy may be measured by the degree in which an emotional element enters into them or in which they tend to pass over into action. Those states that are colourless or agreeable are comparatively innocent, whereas those that are attended by fear, pangs, anguish, horror, or visceral disturbances are peculiarly apt to lead up to convulsions. Many cases have been noted—I shall shortly refer to some of them—in which dreamy mental states mingled with fear have ultimately merged in epilepsy, and this danger seems to me to be peculiarly great when the fear is connected with visceral sensations, such as difficulty of breathing, oppression of the chest, palpitation of the heart, or a feeling of sinking at the epigastrium. A girl who was under my care in the West Riding Asylum, and who had suffered for years from what she called "a frightened belly-ache" and could only further explain as a feeling of fear at the pit of her stomach, after a time became epileptic, her fits being always immediately preceded by the "frightened belly-ache," which lasted for about five seconds, and allowed her time to give notice of the impending seizure, which she invariably did by piteously shouting out, "Bump my back." If before the actual appearance of convulsive spasms anyone could reach her and obey her mandate by giving her four or five smart blows over the lower dorsal vertebræ the fit was very frequently averted. Another girl under treatment at the same time, who before becoming epileptic had been subject to slight fainting feelings accompanied by the dread of being killed, gave notice of her attacks by crying out, the instant before she dropped, the words "Dangers and bolsters!" which were understood to convey an announcement of the revival of her old apprehension and the expression of a wish that a pillow might be brought on which to rest her head. Still another girl, who was epileptic, alleged that for several years before her fits came on she had had occasionally an indescribable feeling of "awful disgust"—a feeling that had once or twice ended in vomiting, and that had often recurred when a fit was impending.

In many cases of epilepsy that have been associated with dreamy mental states the infusion in these states of a feeling of fear and of obscure visceral sensations may, I believe, be made out, visceral sensations in this connexion being more frequent than crude sensations of coloured vision, or noises in the ears, or more elaborate sensations of spectral faces or hearing voices.

But not less ominous than visceral sensations in connexion with dreamy states are actions which are repeated whenever these states recur, for these indicate a deepening or diffusion of the cerebral disturbance which makes it correspond with somnambulism rather than with dreaming. Running movements may only betoken the dominant emotion of fear; masticatory movements, smacking of the lips, and spitting, which Dr. Hughlings Jackson has observed, may mean a crude sensation of taste; but spasmodic movements are premonitory of convulsions. In one case of dreamy mental states which ended in epilepsy there were during these states rapid clutching movements of the hands. In dreamy mental states that are to prove harmless there is mostly tranquillity, but where muscular agitation accompanies them they are not unlikely to advance into something worse than themselves.

I have endeavoured to indicate the morbid character and tendencies of dreamy mental states by illustrating their transition into epileptic seizures or interspersal amongst them; but this is not the only pathological transformation that they undergo, for a history of them is not rarely discoverable in those who have become insane without the intervention of epilepsy, and the passage from them into states of mental disease may occasionally be traced out. St. Pierre, the author of the ever-fascinating "Paul and Virginia," when overcome by disappointment and humiliation and tottering on the brink of madness, was harassed by seizures which had certainly much in common with dreamy mental states. "I was struck," he says, "with an extraordinary malady; streams of fire like lightning flashed before my eyes; every object appeared to me double or in motion. In the finest day of summer I could not cross the Seine in a boat without experiencing intolerable anxiety. If in a public garden I merely passed a piece of water I suffered from spasms and a sudden feeling of horror." A patient of my own, who had a sharp attack of mania with delusions of suspicion and suicidal impulses for two years before its development, suffered from dreamy mental

states. These first took the form of a sudden dead feeling in the head, said to be both psychical and somatic, which came on almost every day; but after three months they assumed a new shape, a sudden sense of fear, during which all objects around him seemed to grow distant and after which there was violent palpitation of the heart. Still a third transformation took place, when the sense of fear changed into a wild desire to run round in a circle and scream, and after that came mania. The whole insanity of a patient of mine seemed to consist in an endless chain of dreamy mental states of a claustrophobic nature. She was of good memory, intelligent, and rational, but whenever awake was distressed by constantly recurring painful impressions or obsessions, which she described as a feeling of "entombment." Every few minutes she felt as if she was in a house in the middle of a great wood and could never get out of it, knowing all the time quite well where she really was. Whenever she looked at the door of the room in which she was sitting she had a horrible feeling that it was too small and that she could never get through it.

But not more by their transitions than by their associations is the true character of dreamy mental states betrayed, for almost invariably they occur during impaired bodily health or in states of exhaustion, or have bound up with them, either in the sufferer himself or in the family to which he belongs, other and unmistakable symptoms of nervous disease. They rarely stand alone, but have for the most part side by side with them other sure signs of a want of equilibrium or of degeneration in the nerve centres. Dr. Hughlings Jackson has reported a case in which dreamy mental states consisting in the impression of having fallen down a coalpit were associated with epileptic seizures and left hemiplegia, due to a coarse lesion of the right hemisphere; and it is noteworthy that of the distinguished men of letters whose confessions of dreamy mental states have been quoted Scott, Dickens, and Rossetti died of brain disease. One of the most striking and persistent cases of dreamy mental state that I have ever met with was that of a man whose father was epileptic, who had one brother a dipsomaniac, another a confirmed opium-eater, another an epileptic, another a lunatic, and one brother and several sisters free from nervous taint. I cannot, perhaps, better convey to you some notion of the associations of dreamy mental states, personal and hereditary, than by recounting the history of a family in which, by a lucky chance, I have been able to trace them through four generations.

A lady who lived at the close of the last century and up to the middle of the present one was subject from girlhood to what were then called "spells of absent-mindedness," but which, seen now, by the light reflected on them by the experiences of her descendants, may be safely pronounced to have been dreamy mental states. This lady was always nervous and peculiar, and is reported at one period of her life to have displayed insane jealousy; but she bore a family of ten children to a healthy and vigorous husband and died at an advanced age from epilepsy, from which she had suffered for some years, the fits being heralded by an aura of the left hand and arm, and being sometimes prevented by the firm ligature of that limb. It was not possible to ascertain the pathological histories of her ten children beyond this—that one boy died from convulsions in infancy, and one daughter from phthisis at adolescence, and that two of them, a boy and a girl, manifested neurotic derangements clearly derived from her. One son was distressed in youth and manhood by brief seizures which may be described now as loss of orientation, but which he himself nicknamed "a topographical topsy-turvy." Generally when out walking and alone his consciousness of his geographical bearings became confused, and this without vertigo or apparent movement of objects to one side. In an instant the world seemed to him to have whirled round, and he could not for the life of him make out the points of the compass, although the landscape and all objects around him remained unchanged in appearance. He felt that it was a matter of pressing moment that he should recover his true position in space, and for a few seconds was in a tremor of perplexity and dread, and then all at once everything was righted and he knew where he stood and said to himself with delight, "That is the north, and I know now exactly how the south and east and west lie." The seizures or bewilderments continued to annoy him, but at widening intervals, until he was about forty years of age, when one day, while standing on the edge of a rock and looking at a waterfall in the Scottish Highlands, he fell suddenly in a violent epileptic fit, and was only saved from death by the presence of mind of a companion. From that date he never again experienced loss of orientation, but he had from time to time epileptic fits, chiefly nocturnal, which did not, however, impair his intellect or health, for he died at a ripe age from Bright's disease. His sister, a woman of great intelligence and energy, was subject from girlhood up till middle age to periodical attacks of migraine with fortification outlines and vomiting, which may be regarded as an allotropic form of a dreamy mental state or a sensory epilepsy. She married and had eight children, one of whom died from acute hydrocephalus and two from typhoid fever. Of the five survivors two, a son and a daughter, became the victims of dreamy mental states at about ten and nine years of age respectively, and continued to suffer from them with gradually diminishing intensity and frequency up till middle life. In these two cases the dreamy mental states were identical in nature, and although the sufferers had never compared notes about them, being somewhat ashamed of them, were described in precisely the same terms to the physician who ultimately made inquiries about them. They were called "frightened feelings" and consisted in a loss of personal identity The youth, who gave the fullest account of them, said that suddenly he lost his hold of the universe and ceased to know who he was. Everything seemed changed in a twinkling, and he lost his relations to time and space. He felt intense terror while the attack lasted lest he should never become himself again, and after it was over there was always violent palpitation of the heart. He was never unconscious during the attack, which lasted ten or twelve seconds at the most, for he could pass from one room to another or run upstairs and voluntarily call out certain names while it lasted. He generally called out repeatedly and in a hurried manner his own name or that of a sister who was about his own age, and he affirmed that the calling out of these names helped him to recover his identity. The frightened feelings almost invariably came on when he was alone, and when assailed by them he ran to seek society, as the presence of anyone drove them away. They never came on when he was engaged in conversation or in work, mental or bodily, involving effort, but always when he was ruminating or carrying on some routine employment. At one time he could bring them on by gazing intently at his own face in a looking-glass, or by allowing himself to drift into a particular train of thought or becoming "abstract and metaphysical," as he termed it. If he asked himself, "Who am I?" "What am I?" "Where do I come from?" "How do I stand related to persons and things around me?" he inevitably had an attack, and the very fear that he might drift into this current of speculation often irresistibly drove him into it, and ended in a repetition of his sufferings. Fear of any other kind, however, or emotional excitement never induced an attack; but he distinctly recalled that after being taken to the Whispering Gallery of St. Paul's, and being terrified by looking down from its height into the cathedral below, he had several times an attack when the terrific impression he then received recurred to him in memory and created a sense of his own insignificance. The attacks never occurred in the morning, only occasionally in the afternoon or early evening, and by far most frequently as he was undressing to go to bed. As they wore off in adult life the last vestiges of them were experienced while he was drowsy and just falling to sleep. Suddenly he would spring up in bed, conscious that his old terror was upon him again, though in a dim and distant way, and always after he did so there was palpitation of the heart. He led an active life, but his health and mental condition were, he himself thought, appreciably affected by his attacks, for he never fulfilled the intellectual promise of his boyhood, but was impulsive and irritable and suffered much from depression and general debility, and finally from angina pectoris. His sister, whose attacks were in all respects similar to his in character and consisted in a temporary loss of personal identity, with a feeling of infinite distress, embarrassed breathing, and palpitation, but less severe and frequent, was also of a highly nervous temperament and had an attack of mental depression with rupophobia. The brother married and had two children, a boy and a girl, both of whom suffered from dreamy mental states, and whose cases I was able to observe. The boy began at the age of ten, when fragile and delicate, to have odd and horrid feelings. They generally came on when he was in bed, but they have happened in church, and at a time when he was not

apprehending them. Except in church he never had them in the presence of anyone, but always when alone. He could not explain the attacks further than by saying that he felt as if he were "just nothing" while they lasted, and was terribly frightened, his heart beating very fast. During the continuance of the attacks, which never exceeded a few seconds, it was usual for him to touch or pinch his body and limbs with his fingers and thumb and say to himself, "Who am I?" "Am I alive?" It was for the most part while he was thinking deeply on "religious or out-of-the-way subjects," as he phrased it, that the attacks came on, and occasionally he was able, on feeling one approach, by thinking to himself, "Oh, it is all nonsense, I am in a room, that is a chair and this a bed," to ward it off; thus by a strong effort recovering his object consciousness when it began to fail. While suffering from these attacks he was disturbed by violent muscular jerks as he was dropping off to sleep, and on one occasion had a numb feeling followed by shaking down the left arm. He cried out for help and was found sitting up in bed and holding his left arm, which was trembling. At the same time he had a strange dream which recurred again and again, and with which he became painfully familiar. In the beginning of the dream he felt enormously large in all dimensions, as if he were the length of the room, and swollen out so that if he moved his leg it felt like the leg of a giant. Then there came a vast haze, and vacancy and great fear, and in the haze black sticks or stripes appeared all round and seemed to be closing in upon him, and then in terror he awoke. Under the impression that they were just "silliness," and that he would be laughed at if he spoke of them, this boy concealed his dreamy states until he was nearly fourteen years of age, when they became so severe and distressing as to make his life miserable, and he was obliged to acknowledge them. He was sent to the country, freed from brain work, carefully nourished, and put upon bromides, and the attacks rapidly diminished in number and severity, but up till his twentieth year he continued to suffer from them from time to time.

This boy's sister at eight years of age began to suffer from attacks similar to his, which she also for a time kept to herself because she thought they were due to "conscience," but which were brought to light when his were revealed. They came on, she said, never when there was bustle around or when anyone was talking to her, but always when she was alone, especially when she was sitting doing nothing, looking at her dress or at the floor, and she could induce them when alone by gazing at her hands, saying to herself it was funny that she was alive, and wondering how it was that she came into the world. "The lost or funny feelings" in her, for thus she labeled them, did not cause terror, but only uneasiness, and made her feel like "a nonentity," and were not followed by any disturbance of the heart's action. They lasted only for a few seconds. Once or twice she had numbness of the left hand and transient lateral hemianopia. Like her brother, she had startings on going to sleep and constantly recurring dreams, in her case of skimmings over the surface of the ground and flying downstairs. Objects at which she gazed intently sometimes grew smaller and smaller and receded into distance, and this experience was always followed by a feeling of sleepiness for a few minutes. When just falling asleep she would often hear a low murmuring, crooning noise, as if someone were sneering at her—a sound which was horrid and created alarm, and was so real that she was obliged to jump up in bed and rub her ears. At other times when falling asleep she would have a loud dinging in her ears, and while still awake, but lying with closed eyes, she often saw long black figures which changed into little dumpy white ones. On one occasion she saw a spectral face, and having raised herself in bed watched it grinning at her in a corner of the room and noted that it had very white teeth and red hair. She also was put under treatment as soon as her dreamy states were discovered, and improved rapidly when relieved from educational pressure and carefully nourished. As the dreamy states diminished in number she became visibly happier and more animated, but she continued to suffer from them once or twice a month until she was eighteen years old, when after an attack of chlorosis they again became very troublesome. In another year, however, they again yielded to treatment, and now she is, she reports, altogether free from them.

I am afraid I have wearied you by this tedious story of the dreamy mental states of a family. It is, however, I believe, unique in affording conclusive evidence of the hereditary transmission of these states through four generations, and it is assuredly instructive as regards their affinities. I cannot now touch upon the many points of interest which this story presents, and even what may have seemed irrelevant details in it have an interest of their own. But I should like to direct your attention to one or two of its more suggestive features.

In the first place then I would ask you to note that it illustrates to us not merely the transmission of dreamy mental states, but of a particular dreamy mental state, and that one of a very elaborate description. The account given of the dreamy mental state in the first generation is too indefinite to enable us to decide its real nature, and in the second generation that state had reference to ideas of space; but in the third and fourth generations, and in four different individuals, it consisted in a loss of personal identity. We have thus a particular aberration of mind springing up spontaneously and independently in four persons, that aberration being exactly the one which the dreamy mental state assumed in the late Lord Beaconsfield, who wrote: "I was not always assured of my identity or even existence, for I sometimes found it necessary to shout aloud to be sure that I lived, and I was in the habit very often at night of taking down a volume and looking into it for my name to be convinced that I had not been dreaming of myself."

In the second place I would ask you to note in the story rehearsed the relations of dreamy mental states to evolutionary changes in the brain. The age at which these dreamy states first occurred is recorded in four cases; it was ten in the cases of two boys and eight and nine in the cases of two girls, and it is to be remembered that at that period of life cerebral development in the female is from one to two years ahead of that in the male sex. In these four cases, too, the dreamy states persisted only while cerebral and mental development was going on actively and vanished when maturity was attained.

In the third place I would ask you to note in this story that in four cases the dreamy states came on almost invariably in solitude, which is favourable to subjective contemplation, and that in three cases they were particularly prone to show themselves, like the hallucinations of chorea, during the invasions of sleep, when the brain is freed to a large degree from external solicitations and volitional control, and is in a transitional state.

In the fourth place I would ask you to note in this story that in three cases—all right-handed persons—indications were given by modifications of sensation and movement in the left arm that along with dreamy states there was, or had been, damage or disorder of the right hemisphere of the brain. Dr. Hughlings Jackson, whose guesses in neurology are more valuable, trustworthy, and enlightening than most other men's lifelong observations and carefully reasoned conclusions, long ago suggested that in epilepsy with the dreamy state the first spasm or abnormal condition would be observed on the left side of the body corresponding with involvement of the right or more subjective of the two hemispheres of the brain, and these three cases are, as far as they go, corroborative of his view.

In the fifth place I would ask you to note in this family chronicle that in two cases the impression of looking from a height was apparently influential in inducing cerebral disturbances of the kind which begins in dreamy mental states and culminates in epilepsy. In one case the first epileptic fit occurred when falling water was being looked at from the edge of a precipice, and when unusual ocular movements were therefore rapidly taking place; and in the other dreamy mental states were brought on by the mere remembrances of the agitation caused by looking down from an altitude.

(To be continued.)

TESTIMONIAL TO MR. BARNARDO, F.R.C.S. EDIN. It is felt by many who are interested in the practical side of social philanthropy that the occasion of Mr. Barnardo's fiftieth birthday should not be allowed to pass without some recognition of the services which he has rendered to the cause of humanity by his work in the rescue and care of waif and destitute children. With this object in view, a movement has been set on foot to promote a jubilee testimonial to him, and we are asked to say that cheques may be forwarded to the Bankers, Messrs. Barclay, Bevan and Co., 1, Pall Mall East, S.W., with whom an account has been opened by the committee, whose names are as follows: Lord Brassey, Lord Kinnaird, Lord Polwarth, the Archdeacon of London, Colonel Howard Vincent, M.P., Mr. Samuel Gurney Sheppard, and Mr. Howard Williams.

The Croonian Lectures,

BEING A

CONTRIBUTION TO THE HISTORY OF THE RESPIRATION OF MAN.

Delivered before the Royal College of Physicians of London on June 18th, 20th, 25th, and 27th,

BY W. MARCET, M.D. EDIN., F.R.C.P. LOND., F.R.S.

LECTURE III.[1]

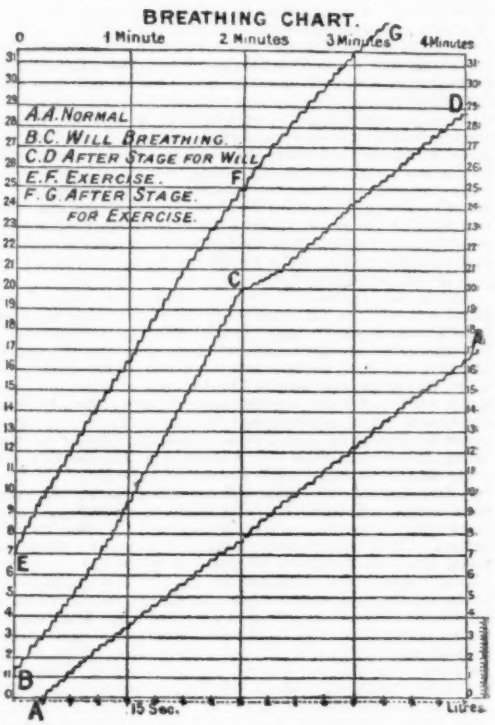
Delivered on June 25th.

MR. PRESIDENT AND GENTLEMEN,—In my last lecture the first three forms of breathing were considered; let us now proceed to the fourth, which applies to respiration under the influence of volition; but before doing so allow me to recall the remarkable experiment of Professor Mosso of Turin. This gentleman constructed a metal instrument, a sort of glove, through which his fingers were inserted, with the exception of the middle one; with this finger he worked a weight up and down until the digital muscles concerned in the labour were completely exhausted; at this stage the muscular contraction was carried on by means of electrical excitation, and he found that if, after a short period, the excitation was discontinued the finger was able still to maintain its work, showing that the muscles had not ceased contracting from actual fatigue, but from exhaustion of the will which had been exercised to move them.

There is an interesting borderland between psychology and physiology which is narrowing daily. The discovery of the electrical excitability of the brain by Fritsch and Hitzig, and of the motor centres by Ferrier and Yeo, followed by Horsley and Schäfer, has opened altogether a new field of research and brought the mental and physical functions nearer to each other. We do not know much of the physical effects exerted on the body by the perception of our senses. Moleschott, as far back as 1855, showed that from one-tenth to one-fourth more carbonic acid was exhaled by frogs under the influence of light than when in the dark, and also that this increase varied directly as the intensity of the light, which acted through the eyes and skin. It occurred to me that, if light exercises a distinct physical action on the living body, perhaps sound would produce a similar effect; but even a fairly loud sound, such as that produced by the beating of a gong close by, gave no positive result, the carbonic acid emitted under the influence of the sound being sometimes a little more and sometimes a little less than normal, and the same could be said of the oxygen absorbed. There was, however, a slight excess of air breathed (expired) while the noise was continued, which varied from 0·036 litre to 0·733 litre per minute in eleven experiments; and this slight excess was balanced by a corresponding diminution of the volume of air exhaled during the first five or six minutes after the sound had ceased.

The perceptions of our senses are certainly independent of our will, still the sight and hearing may not be entirely unconnected with volition; or it would, perhaps, be more correct to say that objects may act on the brain through sight, and sounds through hearing, without producing any corresponding impression. Take the case of a person lost in a brown study, he does not see objects though with eyes wide open, nor will he hear a sudden noise. By submitting our senses to the exercise of volition we train them and improve their perception. Thus we train the sight to the better appreciation of the beauties of nature. Those thrilling descriptions of Alpine scenery must be the outcome of the training of the sight to the thorough enjoyment of mountain views. The rapture into which Sarasate and Joachim throw their hearers requires a certain training of the audition. Mosso has shown that volition is a cerebral act attended with fatigue. I need hardly remind you of the fatigue experienced in listening to good music; two hours thus employed will, as a rule, be amply sufficient, and it often happens that in less time the attention begins to flag and the impression to subside. Operatic music may be listened to much longer, for the obvious reason that in an opera the exercise of volition is distributed between two brain centres—those of hearing and of sight—instead of being concentrated on a single one, and is on that account less exposed to fatigue.

We now come to the influence of volition on muscular movements. There are instinctive muscular movements in which volition is not concerned—for example, those required to balance the body; but these have been acquired in the first instance by the exercise of volition or by training. Hence it appears that training is of fundamental importance in all muscular exercise, such training being at the same time applied to the *volition* excited by the cerebral motor centre concerned in any special form of muscular work. Learning to play on a musical instrument is certainly training volition quite as much as, if not more than, training the muscles. The surprising rapidity with which the fingers run over the notes of the piano in response to the will is also a case in point; although, if I understand rightly Dr. Bastian's views, contained in his book on "The Brain as an Organ of Mind," it is very possible that such training, especially in young people, should develop a certain set of nerves through which these rapid impressions are conveyed, becoming automatic in their character. We shall see that volition has a direct action on respiration, hence training volition is at the same time training respiration. Let us now pass on to the subject which forms the substance of this lecture—the Influence of Volition on Respiration.



The tracing "under exercise" is shown to contrast with that of breathing "under volition."

Under ordinary circumstances, when sitting in repose, the mind is at rest as well as the muscles, and the breathing quiet and regular. Should a strong effort of volition be made, although unattended by any muscular contraction, it may be observed to react immediately on the respiration. If after a tracing of normal respiration has been obtained the person under experiment sets his mind to work and exerts his volition strongly towards carrying a heavy weight, running to catch a train, or pursuing another person uphill, the tracing

[1] Lectures I. and II. were published in THE LANCET of June 22nd and 29th, respectively.

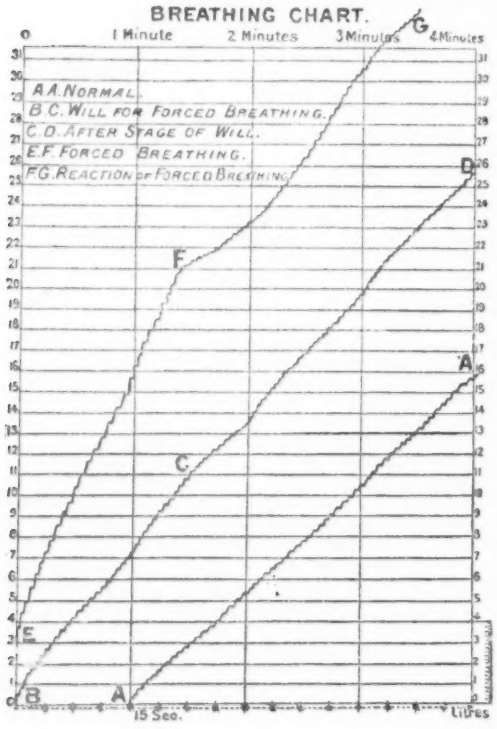
recorded on the chart will be observed to ascend more rapidly than in the case of mental rest, showing a greater volume of air breathed in the same time. After, say, one or two minutes, let the influence of the will be withdrawn and respiration continued under mental repose, the first effect will be the production of a respiratory pause, the tracing taking a more horizontal direction, as seen in forced breathing, though perhaps somewhat less marked, after which the breathing will return to the normal, the tracing obtained being much like that of forced breathing. Similar experiments on different persons invariably yielded the same kind of curve on the chart. It follows that the influence of the will is to increase the volume of air breathed, and that on releasing volition a pause is produced very like that which follows forced breathing; but there is this difference with forced breathing, that when the will is applied say to the act of locomotion the increased pulmonary ventilation is absolutely automatic, while forced breathing is the direct effect of volition applied towards the expansion of the chest. An explanation of the pause or apnœa after forced breathing is that forced breathing produces an increased absorption of oxygen, and this oxygen, being used for the requirements of the body, lessens for a few seconds the calls for pulmonary ventilation. This idea suggested that perhaps such an accumulation of oxygen in the body might be employed by the muscles for a temporary increase of power. The following experiment was therefore made. While sitting in an armchair a weight of 10 lb. was alternately raised and lowered with the hand in keeping with the striking of a metronome, and to my surprise it was observed that after a succession of deep inspirations the weight could be raised a much greater number of times than after normal breathing; indeed, the increase of power was such that the weight could be lifted to the same height before exhaustion, perhaps two-thirds or twice as often after forced breathing as after natural respiration. For a time this effect of forced breathing was to me absolutely unaccountable, as there was no apparent call for an accumulation of oxygen in the tissues, and no proof of any such absorption; moreover, the excess of carbonic acid formed by the muscular power added was infinitely greater than could be accounted for from any excess of oxygen absorbed in the body. But perhaps in forced breathing there was really an excess of oxygen absorbed, which was taken up by the brain centres of forced breathing and gave "volition" the power of doing so much additional muscular work through increased respiration. This view was subsequently investigated and its correctness shown by experimental methods.

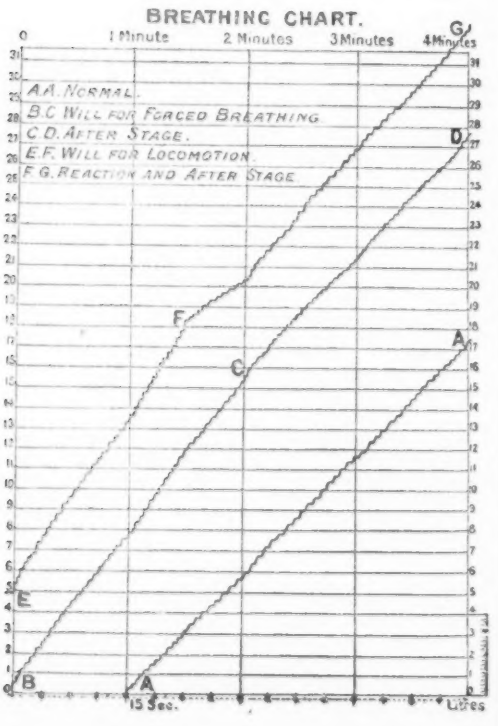
Allow me to quote the experiments which show to what extent muscular power may be increased by the preliminary exercise of "volition" exerted in the form of forced breathing. It might be added that, in order to succeed with these experiments, the attention, or "volition," should be given to the act. It failed once or twice when first tried, though successful on every other occasion with that same person, probably because the "will" was not applied with sufficient power or was not yet possessed of sufficient training for that kind of experiment.

Person under experiment.	Weight lifted.	Number of times weight lifted normal.	Time of forced breathing.	Number of times weight lifted after forced breathing.	Ratio of increase.
	lb.		min.		
Author	8	24	2	65	2·71
,,	8	26	2	50	1·92
,,	8	26	1	34	1·31
,,	10	21	2	36	1·71
Assistant	8	30	2	32	same
,,	8	33	2	49	1·47
,,	8	33	2	41	1·26
,,	8	39	2	63	1·62
,,	10	41	2	69	1·68

It is remarkable to what extent the arm becomes accustomed to this kind of work and can develop more and more strength with time from mere training. This is seen in the figures given later on, but it is important to observe that the present remark does not apply to the experiments taken singly, when the increased work was clearly due to increased power from a temporary cause. This point was set at rest by a very simple experiment. Two consecutive series of liftings were made without the intervention of any forced breathing. The weight was lifted till stopped by exhaustion 26 times in the first series and 26·5 in the second; hence it cannot be said that any influence of training was exerted in the comparative experiments. The effect of forced breathing in increasing muscular power can be tested by anyone while sitting quiet in his own room. My friend Dr. Louis Parkes lifted a weight of 8¼ lb. fifty times while in a state of physical and mental repose; and after forced breathing for one minute and a half, applying his mind to the act, he raised the same weight to the same height 125 times. A lady reclining in an armchair lifted with her right arm a tea-kettle weighing 4 lb. 13 oz. sixty times, and after resting ten minutes and breathing forcibly for one minute raised the same tea-kettle 100 times to the same height. The greatest effect was produced on a medical friend, who after ordinary breathing lifted a weight of 4 lb. 203 times in succession, and after a rest and forced breathing for two minutes lifted the same weight the same height no fewer than 700 times. In this case volition taxed the muscles to the utmost, and the arm remained tired and stiff for some days afterwards. The weights in all these experiments were lifted under natural or automatic respiration after forced breathing had been discontinued.

The absorption of an excess of oxygen in the body under forced breathing was so far an assumption, and it became necessary to determine experimentally if such were the case; the methods in use for the determination of carbonic acid and oxygen in the expired air being extremely delicate, the results obtained may be looked upon as thoroughly reliable. The experiment was undertaken in the following way. After resting for some time in the armchair the expired air in normal breathing was collected for subsequent analysis, then forced breathing was taken for about two minutes and the air expired collected separately. As soon as the appointed time had elapsed a signal was given, and the person under experiment relapsed suddenly into automatic breathing, while at the same time, by means of a three-way stopcock, the air expired was diverted into a third receiver, breathing being continued until it had come back to its normal condition in repose, which took place within six or seven minutes. There were thus three samples of air for analysis. The volumes of air inspired in each stage were calculated, as previously explained, from the nitrogen found, which underwent no change; the volume of nitrogen obtained yielding by a simple proportion the volume of air inspired. The difference between the volumes of air inspired and expired (after the application of a correction for carbonic acid emitted from the blood, into which subject it would take too long to enter at present) gave the volume of oxygen absorbed, and it is the excess of this oxygen absorbed in the body in forced breathing over the oxygen absorbed in normal respiration which concerns the present question. In eight experiments the increase per minute above the normal of oxygen absorbed under forced breathing, or rather under volition for forced breathing and response, varied from 0·8 to 36·4 c.cm., with a mean of 13·9 c.cm. (53·0 c.cm. mean absorbed normal, and 67·3 mean absorbed under forced breathing). At the same time the volumes of air expired were greater under forced breathing by 69 per cent. of normal. Therefore, in these experiments considerably more air had been inspired, and there was a marked increase of oxygen absorbed. If the excess of oxygen absorbed in forced breathing has for its object the exercise of volition, surely this absorption must take place in the motor centres of the brain concerned in forced breathing, and therefore in the medulla oblongata. So far the argument stands thus. Forced breathing is accompanied by an excess of oxygen absorbed in the body and leaves in its wake increased muscular power, but this excess of oxygen absorbed is very insufficient to account for the increase of carbonic acid produced, hence it does no such thing. Nothing, therefore, is left to explain the excessive development of power but an increased effect of volition, brought about by the absorption of an excessive amount of oxygen in its motor centre, which is, in the present case, the motor centre of respiration. This is a new departure, and one which appears to me to be fraught with interest. If the exercise of the will necessitated the absorption of oxygen in forced breathing, it was natural to conclude that the exercise of "volition" for forced breathing,





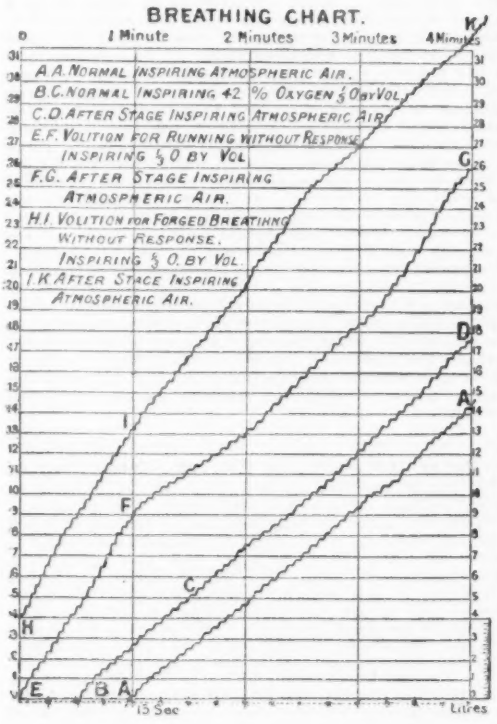
though without response, would be attended by a similar result; and, if so, it should also produce an increase of muscular power as observed after forced breathing. This reasoning gave rise to the following experiment. When in a state of mental repose I lifted a weight of 10 lb. 42 times to a height of 18 in., after which the arm became too tired to continue the work. After a sufficient rest, the will was applied to forced breathing, but without response, for two minutes; and on suspending its action I was able to lift the weight 76 times, being an increase of 34 liftings. A similar experiment with another person gave 70 liftings for normal, and 96 after the exercise of volition towards forced breathing without response; therefore, in both these instances the increased development of muscular power was clearly the effect of volition only. The proof that the effort of volition in the present case was unattended with response is to be found in the form of the tracing obtained.

When volition attended with response is exerted towards forced breathing the record on the chart invariably shows a pause or state of apnœa on returning to automatic breathing in repose; but when volition towards forced breathing is unattended with response there is no pause, or the pause is barely appreciable, as seen in the above charts. The same experiment was repeated with volition applied to various other forms of exercise, and an increase of power was invariably obtained; thus after volition for running without response I raised a weight of 8¼ lb. seventy-seven times against forty-seven for normal. This increase of power must have been produced through the agency of the respiratory centres, as, whatever be the form of volition, it must supply the oxygen necessary for the heat required towards the increased muscular exercise.

If, after exerting volition without response greater development of muscular power is obtained in the same way as when exerting volition towards forced breathing, and if the latter is, as I have shown, attended with an increased absorption of oxygen, it appeared probable that an excess of oxygen would also be absorbed under volition, though without response, exerted towards various forms of muscular exercise, and a number of experiments were made which showed most conclusively that such was the case. In a first series of seven experiments, the will being applied without response to running or rowing, the excess of oxygen absorbed in four of the seven experiments varied from 7·7 c.cm. to 19·4 c.cm. per minute, with a mean increase of 12·4 c.cm. per minute, while in two of the other three there was a slight decrease in the volition stage by 2·1 c.cm.; one of these, however, showed an increase in the after-stage, as if in this case the oxygen in excess had been taken in the first instance from that in store in the muscles and other tissues, and returned from the atmosphere on the resumption of mental repose. On releasing volition and relapsing into normal automatic breathing, the mean oxygen absorbed was less than normal, the deficiency compensating very nearly the excess taken in under volition. Therefore, after the phenomenon was over, the absorption of oxygen had apparently undergone no change or combination in the motor centre. The oxygen absorbed was now determined on three different occasions after applying the will without response towards lifting a heavy weight; the results in these cases were well defined. In one experiment the excess of oxygen absorbed per minute under volition was 15·6 c.cm., in another 13·8 c.cm., and in the third 35·8 c.cm., with a mean of 21·7 c.cm. The oxygen absorbed in the after-stage again very nearly compensated the excess under volition. This series, though consisting of only three experiments, therefore confirms the former in every way and shows that volition towards lifting a weight causes an accumulation of oxygen in the body—clearly in the motor centres of the muscles of the arm. A third set of six experiments was made by applying volition without response towards forced breathing. The increased absorption of oxygen in the volition stage varied from 1·5 c.cm. per minute to 43·0 c.cm. per minute, with a mean of 23·9 c.cm., and this excess was also nearly balanced by a corresponding diminution of oxygen absorbed in the after-stage. Probably these experiments, in which the oxygen determined "as absorbed" is taken from the air, do not show the total volumes of oxygen absorbed by the motor centres, as it is impossible to ascertain how much is supplied from the tissues. It thus appears that whenever volition is applied towards any form of exercise there is an absorption of oxygen in the cerebral centres concerned in the

phenomenon; and apparently with an excess of oxygen absorbed more work can be done than if the excess be wanting. The following experiment, in which a mixture of oxygen gas and air was breathed, is a striking confirmation of this view. The author lifted a 10 lb. weight forty-one times before being exhausted. After a rest he exercised his volition strongly towards lifting a weight for one minute and a half, and then raised it sixty-one times in succession. Again, after another rest, he exercised the same kind of volition as before, while inspiring a mixture of two-thirds of air and one-third of oxygen, containing nearly 43 per cent. of oxygen, instead of 20·9 per cent. as in atmospheric air, and immediately afterwards lifted the weight eighty-seven times before being arrested by fatigue; therefore under the influence of volition and air twice as rich in oxygen he could lift the weight twenty-six times oftener than when inspiring atmospheric air, the will being applied in a similar manner. This experiment repeated on another person gave with volition and atmospheric air seventy-seven liftings, and under the influence of volition and a mixture of air and oxygen, similar to the previous one, ninety-four liftings, or an increase of seventeen liftings.

Returning to the respiratory tracings under the influence of volition, we find that, whether the will be applied without response to locomotion, to manual labour, or to forced breathing with response, the curve is about the same—that is, first


BREATHING CHART.
1 Minute
2 Minutes
3 Minutes
4 Minutes
A A. NORMAL INSPIRING ATMOSPHERIC AIR.
B C. NORMAL INSPIRING 42 % OXYGEN & O BY VOL
C. D. AFTER STAGE INSPIRING ATMOSPHERIC AIR
E. F. VOLITION FOR RUNNING WITHOUT RESPONSE
INSPIRING ⅔ O BY VOL
F. G. AFTER STAGE INSPIRING
ATMOSPHERIC AIR.
H. I. VOLITION FOR FORCED BREATHING
WITHOUT RESPONSE.
INSPIRING ⅔ O. BY VOL
I. K AFTER STAGE INSPIRING
ATMOSPHERIC AIR.
15 Sec
Litres

the tracing is steeper than normal, and then, on releasing volition, there is a pause, followed by another rise, showing an increased volume of air breathed beyond the normal. One tracing under volition differs from all the others: it is that for volition towards forced breathing without response, when the pause is altogether wanting or hardly visible. This pause at first appeared to be due to the accumulation of oxygen in the motor centre under the action of volition, but the absence of any pause in the records of respiration under volition for forced breathing without response, even after breathing air mixed with oxygen gas, showed the present view to be mistaken since this form of volition is also attended with an accumulation of oxygen in the respiratory centres. The only explanation I can now offer for this pause is the following. All the centres concerned in volition, whether they be the motor centres for locomotion or manual labour, &c., act on the centres of respiration; and when volition is accompanied by response a very large increase of breathing is produced, which is controlled by the requirements of the centres concerned. As soon as volition without response is arrested there is no longer any excess of pulmonary ventilation required, and normal automatic breathing follows; but before the centre of respiration has shaken off the influence of the other centres a short lapse of time intervenes during which the oxygen stored up in the tissues comes into use; this is the reason which appears to me to account for the pause, a view confirmed by the fact that, as shown in the breathing records, immediately after the pause there follows a slight but decided increase of air inspired beyond the normal, whose object would be to replace the oxygen taken from the tissues. Now in volition towards forced breathing without response, when the will is suddenly released no lapse of time is needed as there is only one centre concerned in the phenomenon—that of respiration; hence there is no pause, and the tracing returns immediately to the normal. Even if a mixture of two-thirds of air and one-third of oxygen be inhaled whilst volition is exercised towards forced breathing there is no pause; but a considerably increased pause is observed after inhaling the mixture of air and oxygen, and at the same time applying the "will" to other forms of exercise, as seen in the above chart.

It might be objected that the oxygen absorbed from the air in natural respiration is possibly liable to change every few minutes, and that the increase obtained under volition is due to some other cause than the exercise of the "will." In order to answer this objection the following experiments were made. Air was expired while in mental repose, and reclining in an armchair, in three successive bell jars, each receiver taking seven or eight minutes to fill. The three samples of air expired were analysed separately, and the experiment, being repeated on three different days, gave the following figures for oxygen absorbed per minute:

Cubic Centimetres of Oxygen absorbed per Minute.

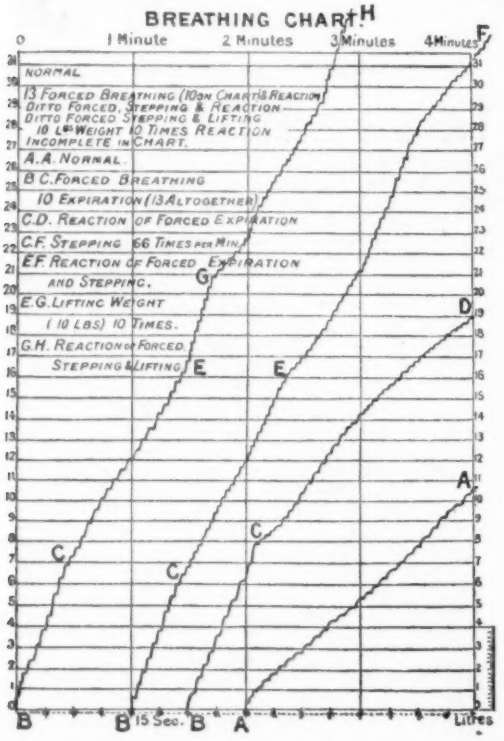
Experiment I.				Experiment II.				Experiment III.
a—49·5	...	...	...	*a*—43·0	...	...	...	*a*—42 3
b—53·9	...	...	...	*b*—42·0	...	...	...	*b*—41·5
c—48·6	...	...	...	*c*—46·6	...	...	...	*c*—38 5

The greatest difference per minute in each experiment was therefore 5·3 c.cm. in the first experiment, 4 6 c.cm. in the second, and 3 8 c.cm. in the third, showing but little change in the oxygen absorbed in three successive experiments and giving much confidence in the method of analysis.

It may therefore be safely concluded that in the experiments on volition it was the effort of the will, and no other circumstance, which increased the volume of oxygen absorbed. Out of 24 experiments there were 3 with an increase of less than 1 5 c.cm. per minute and 2 with a decrease of 2 c.cm. The increase was marked in the other 19. In two series of experiments it amounted to 22 and 23 c.cm. There is no other way of accounting for that increased absorption of oxygen but through the agency of volition. Now, where can that oxygen go to in the body? It cannot remain in the blood, as hæmoglobin on leaving the pulmonary circulation is considered as charged with oxygen as it can be. On the other hand, there must be a demand for oxygen somewhere, because, as I have shown in my first lecture, no oxygen is taken into the body unless it be required. Of what use can be that oxygen taken in for the requirements of volition if not to exercise some sort of direct action on the motor centres concerned in volition? A parallel case would be the absorption of increased volumes of oxygen for the performance of muscular exercise, although the mode of action in volition appears to be of a very different character. The fact that oxygen is required in the body towards volition is shown by the increased volume of air breathed under volition. If this air was wanted for an excess of carbonic acid, we should find an increase of carbonic acid produced. There is indeed a very slight increase, but it is wanted for the extra work done by the muscles of respiration, and there may be some slight oxidation of hydrocarbon in the brain substance; in some cases it is impossible to find any production in excess of carbonic acid, this being probably due to physiological irregularities which it is impossible to control. We find, also, a certain volume of carbonic acid displaced from the blood by the

increased volume of the air breathed. It might perhaps be objected that out of twenty-four experiments five results failed to agree with the other nineteen; but these exceptions occurred in the early part of the inquiry, and volition had very possibly not been brought to bear so earnestly as it was in subsequent experiments. It is a fact that, the more experienced we became—my assistant and myself—in these volition experiments, the greater was the volume of oxygen which was found absorbed. There is evidence in favour of this view in addition to chemical analysis: this is increased muscular power, and I shall again beg to direct your attention to this phenomenon.

If additional power is given to the muscles by a preliminary effort of volition, naturally there must be an increased amount of carbonic acid produced in proportion to the increase of strength developed. Three experiments were made which showed clearly that such was the case. The mean relation of the strength developed was 1 to 1·300, and of CO_2 to CO_2 while engaged in the extra work was 1 to 1·396; there was not, therefore, much difference between those relations for such a small number of experiments. If after exercising the will, instead of returning immediately to the state of physical and mental repose the weight of 10 lb. be raised in the usual way for one minute, followed by repose, while a record of breathing is taken on the chart, the pause which has been checked by the exercise now appears, and afterwards respiration returns much increased in volume. Finally, if immediately after the exercise of volition for one or two minutes stepping exercise is taken for one minute, followed at once by a return to the sitting position, and lifting the weight, say, ten times in succession, on assuming the state of rest the pause will again appear, though perhaps less marked, and there will be for a time a considerable increase in the pulmonary ventilation beyond the normal in repose. This is clearly seen in the subjoined chart recording the experiment.



If anybody should be still disposed to question my contention that the increased muscular work in these experiments is due to the influence of volition, the experiment of Mosso showing that fatigue of "volition" suffices to arrest muscular contraction would go far to dispel any doubt in that respect. The following experiment, which I have not seen quoted, confirms remarkably Mosso's discovery, while at the same time it is a strong argument in favour of the view advocated in this lecture, and differentiates very clearly the motor centres of the brain. Let a person, while sitting in an armchair, raise a weight, as in the experiments related above, until his arm is too tired to continue the work. He then takes a rest in mind and body of, say, one minute, and again resumes lifting the weight as long as he can. The number of times the weight is lifted is counted in both cases. Next a rest is taken, perhaps, for ten minutes, and the same kind of exercise repeated until the arm is exhausted. At the expiration of that time the arm is placed in a state of repose, but the "will" continues being applied as strongly as possible towards the exertion of lifting the weight, and this is continued for one minute. At the end of that minute the weight is again raised with that same arm, when it is found to be so tired that it is not equal to raising the weight by perhaps more than about one-half the number of times the weight was lifted under precisely similar circumstances without the application of the will. If, however, during the interval of one minute between the liftings, the will be directed towards a different kind of muscular work, such as running uphill, on resuming the lifting, the arm is found to be fresh and rested, and can raise the weight the same number of times as if the mind had been at perfect rest for that minute.

The following are two experiments which illustrate the phenomena. While reclining in a deck chair I raised a weight of 10 lb. 49 times and gave up from fatigue; after resting for one minute I lifted the same weight to the same height 40 times. A long rest was now taken and the weight lifted 47 times, when the work was stopped by fatigue; then the arm was rested, while applying volition as strongly as possible to a continuation of the same effort of lifting for a lapse of one minute. Lifting was now resumed, when the weight felt very heavy and could only be raised 21 times—clearly not because of the fatigue of the muscles, as they were rested, but from the exhaustion of the power of volition. A similar experiment on my assistant gave the following results: normal liftings, 42; after one minute's mental and physical rest, 41 liftings; after a prolonged rest, 44 liftings; after one minute's physical rest, but with volition exerted towards a continuation of the same exercise, 31 liftings. The same experiment was repeated by both of us without applying the will towards the continuation of the same exercise, but towards an exercise quite different, such as running, thereby resting the motor centre on which volition had exerted its action towards lifting the weight. After a minute the arm felt perfectly rested and raised the weight the same number of times to the same height as before.

ROYAL MICROSCOPICAL SOCIETY.—A meeting of this society was held on May 15th, Mr. E. M. Nelson, Vice-President, being in the chair. Messrs. Watson and Sons exhibited a simple Centring Underfilling for use with any ordinary student's microscope. The Chairman exhibited a new Low-power Lens by Zeiss, and also exhibited a new Photographic Lens. Mr. W. C. Bosanquet, read a paper on the Anatomy of Nyctotherus Ovalis. Mr. G. C. Karop read a paper by Dr. A. Bruce describing a new Microtome for cutting Sections. The chairman announced that the library would be closed from Aug. 12th to Sept. 9th, and that the next meeting would be on Oct. 16th.

THE PRINCE OF WALES AND THE SHAHZADA AT ST. BARTHOLOMEW'S HOSPITAL.—H.R.H. the Prince of Wales, the President of St. Bartholomew's Hospital, on Friday afternoon last visited the institution, accompanied by the Shahzada. The visit was private, and but few of the public were present at their arrival. Having passed through the gateway of King Henry VIII. they entered the quadrangle, where they were greeted with loud cheers from large numbers of students and the members of the staff. All those patients who could be safely brought out had been thoughtfully accommodated with seats and couches in the square, where they were able to get a good view of the Royal visitors, and, as they waved their handkerchiefs and cheered, the Prince of Wales and the Shahzada smilingly acknowledged their welcome. The governors of the hospital had assembled in the large hall, and after their reception the Royal visitors proceeded to view the various wards in the hospital as well as the new theatre. The building had been suitably decorated for the occasion.

ABSTRACT OF AN

Address

ON THE RELATIONS OF SCIENTIFIC TO PRACTICAL WORK IN THE UNIVERSITY OF CAMBRIDGE.

Delivered at the opening of the Summer School of Medicine for Qualified Medical Practitioners, at Cambridge, on Monday, July 1st, 1895,

BY SIR GEORGE MURRAY HUMPHRY, M.D. CANTAB., F.R.C.S. ENG., F.R.S.,
PROFESSOR OF SURGERY AT CAMBRIDGE UNIVERSITY.

GENTLEMEN,—To me, as senior member of our teaching staff, has been assigned the pleasurable duty of welcoming you to this ancient and delightful seat of learning so full of interests and opportunities of various kinds. Here all, or nearly all, the branches of science are cultivated and taught, cultivated and taught in as free, open, and genial a spirit as the laws and restricting prejudices of our country permit. Here men and women are seeking education when minds are most plastic, when impressions are quickest and most durable, at the important time of life when growing freedom from restraint exercises, and needs, growing self-control, and when the mental training most requires to be balanced and furthered by corresponding training of the energies and vigour of the body. To have lived and moved for more than half a century in such a place, and taken during the whole of that time an active part in its work, and to have been associated with and stimulated by the gifted men similarly occupied, has, you may suppose, been an inestimable privilege for which I cannot be too thankful. I came here reluctantly, simply as a professional bread-winning duty, with no thought of taking part in university work, and would have contentedly gone away had I failed in my object of obtaining the surgeoncy to the hospital; but I soon learned to appreciate and enjoy the great and special advantages of the place; and you may judge what a pleasure it has been to see these advantages gradually developing and increasing, to witness the removal of all religious, or rather ecclesiastical, restrictions without the weakening, rather with the strengthening, of religious feeling, to watch the gradual increase of the area of study and teaching, to note the liberality of the university, exercised to the full extent of its limited but inadequate means, in building laboratories, museums, and workshops, and in providing professors and other teachers in the several branches of science, and, lastly, to see medicine taken so fully and generously within the university range, and the medical school placed upon a flourishing and, I hope, assured basis.

The two old universities were from an early period regarded as the special seats of the higher learning and the more intellectual cultivation. To this feeling with regard to them they probably owed the Royal patronage and countenance which gave them charters and other privileges, and which discouraged the foundation of similar institutions in other parts of England, it being thought better to concentrate the teaching power in these two places than to diffuse it elsewhere. To this feeling were due the donations and bequests by which the colleges were founded and enriched, and also made the means of conferring those social advantages which are to be found in no other places in the world. To live up to this estimate of being the seats of the higher learning and the higher education must be the great effort and ambition of the universities at the present time and in the future. The doing this becomes increasingly difficult as the stream of time bears upon us and floods us with an ever-increasing amount of material which has to be sorted, analysed, and appropriated, and which throws so much labour upon the teaching and the acquisition of recognised facts that little time is left for that real appreciation of them in which higher study consists. Doubtless the old, and to some extent the modern, ideal of the higher learning and the higher perceptions was based upon the study of the literature and are of the ancient Greeks, in whom thought could deal with and dominate over fact, in whom the mind was comparatively free from the trammels of the surroundings, in whom the appreciation of beauty of form was not hindered by detail of structure, and in whom the intellectual energies were not diverted from philosophical thought by the necessities of what we may fancy to be a more civilised, and which is certainly a more complicated, life. At present in the study of a science the mind is so choked by the in-pouring of facts that little room is left for reflection upon them. Knowledge of laws and principles has too much to give way under the pressure of accumulated details, and the higher, the more valuable, the more really mind-strengthening education is proportionately sacrificed. There can be no doubt that the examination system which rules over teaching in all our schools—primary, secondary, and university—is partly accountable for this. A knowledge of facts is more easily acquired and more easily and quickly shown and appreciated in an examination than a knowledge of principles. To state that a thing is we recognise to be far easier and more rapidly done than to state how or why it is. To give a chemical formula is easier and quicker than to give the principles illustrated by it. Many a man will flourish off the description of a bone without its having ever occurred to him to think of the purposes served by the conformation of its several parts, and the examiner usually requires no more. Hence the production and profitable sale of little cram-books, and the cramping of interest and intelligence and enjoyment in study. How terribly serious is this. How greatly has it increased since the halcyon days when I began and throughout my pupilage enjoyed the study of medicine, when I felt no thraldom of examination, when an hour of *viva voce* at the college was all that was needed, and cram-books did not exist.

To turn the wheel of time back and revert to the old ways, however good and pleasant they may have been, is impossible. We must march ever on. It is useless to try to stop the course of events. Facts must grow and examinations must continue, and, I fear, become more stringent and more crushing of freedom and pleasure in study. Still, it must be the great duty of the universities to meet these difficulties, to maintain reason and thought in their proper status, and to prevent their being weighed down and stunted by fact-cramming and examinations. A great power and responsibility exist with examiners, for it is with them to set not only the standard but the quality of the knowledge required; and one cannot but feel that by demanding less range of study, but more depth of knowledge with clearer perception of laws and principles, they would do great service and would promote higher and sounder teaching and better learning. These remarks apply in their full extent to medicine. Let it be remembered that we are not better than our forefathers, that none of us are wiser than the wise men of old, that mental power is not increased by the new ideas and new discoveries handed down to us. These have added immensely, especially of late, to our means and opportunities, but not to our ability in employing these means; and experience tells me that the ground over which the medical student has now to travel is too much for him, and rather jades than strengthens him. My effort, too often, as I think, ineffectual, has always been to curtail the syllabuses and lessen the number of subjects which are required of him; and when I was a member of the General Medical Council I always resisted the tendency to demand of him special knowledge of special subjects, because I felt that the more that tendency was yielded to the less likely would he be to acquire a sound and intelligent knowledge of the great principles which lie at the root of the whole science and practice of medicine. I desired to see the preliminary subjects made simpler, easier, narrower in range, more thought-inspiring by the inculcation of principles, more truly educational. I am sure that the student would thus be better fitted than he now is to enter thoughtfully upon the ground of medicine proper, better prepared to dig deeply into its most fertile soil, better prepared to interest himself in, and exercise his reason upon, the many facts which medical science affords. Far be it from me to detract from the practical study of medicine. My life has been mainly spent in it, and I regard it as supreme and more important than any other subject. I can little sympathise with the learned mathematician who drank to the toast of "Pure Mathematics, the Science which has never been degraded by Practical Application." But I have ever felt it to be the business of the university in an especial manner to associate scientific study with practical work, believing that thus the best practitioners are made, and knowing that the men who have stood foremost in our profession have ever signalised themselves as the chief cultivators of its science. Human anatomy is a good example of what I mean, not only on account of its high practical value and its direct bearing on diagnosis and operative surgery, but also as being

a medium of cultivating accuracy and attention and reflection upon the physical construction of the human body, and the adaptation of its parts to the purposes they have to serve. A fact in anatomy, as I tell my pupils, should be regarded as a peg to hang a thought on, and without the thought it loses much of its interest and educational value. Physiology and pathology are linked together in disclosing processes, healthy and morbid, as well as the deviations of the morbid from the healthy; and they, together with the investigation of the Therapeutical means by which the morbid processes are to be brought back to the healthy, carry us into Alpine and difficult heights of experimental and philosophical science, in climbing which the energies of many ages will find ample scope. In Morbid Anatomy, Medicine, and Surgery, where we deal with the results of these processes upon the fluids and solids of the body, with the symptoms to which they give rise and their treatment, and the relations of causes and effects, we find problems which long have, and long will, occupy the minds and call forth the skill of thoughtful and keenly observing men. Indeed, medicine is so vast, so difficult, and in its practical bearing so important, a science, making, perhaps more than any other science, so great demands upon body and mind, that too much attention cannot be paid to the education for it.

We have invited you, Gentlemen, to come and consider with us for a short time this great subject of medicine from a university—that is, as I have before said, from an educational and a higher learning—point of view—the point of view from which it and every subject taught in this place should be considered. We shall be glad to have your opinions and to hear your criticisms, for those who are in the busy struggle of professional life can form good judgments as to the best means of equipping for it; and assuredly in the matter of teaching we have yet much to learn. We propose to take you back, in a measure, to school life and school thought, and demonstrate in our laboratories some of the new methods which the quickly advancing work of the last few years has brought about, with their practical applications. There will also be demonstrations of specimens from the Museum of Morbid Anatomy; and there will be demonstrations of cases at the hospital, as well as special lectures by the Regius Professor of Physic and, I wish I could add, the Professor of Physiology. You will see, therefore, that our object is to connect scientific and practical work, to make your brief sojourn here not, as might be supposed, a festive but a really working period, a period for observation, study, and mutual instruction. At the same time, it would scarcely have been in harmony with the spirit of the place if we had forgotten the great principle conveyed in the aphorism, "Otiare quo labores." Accordingly, opportunities will be afforded for visits to the colleges, and there will be a garden party in the Fellows' Garden at King's College to-morrow afternoon, at which members of the *séance* and ladies accompanying them will be welcome. We had some hesitation about attempting this new departure in the present summer, feeling that the great attractions of the meeting of the British Medical Association in London would divert so large a proportion of those who can spare a short time from the pressing requirements of medical practice; but we determined to take courage while the spirit was upon us, and to carry out our plan if a few only expressed their willingness to come. We relied upon the interest common to the members of our profession in the advancing science of medicine—an advance which has been greater in recent years than in any former corresponding period. The response to our invitation has proved that we are not mistaken. It has shown that the proposal was generally acceptable to the members of the profession, though many, of course, could not avail themselves of it. I trust you will not be disappointed.

I must not omit to mention the willing and generous manner in which the professors and their assistants have rendered us their aid by opening the laboratories, making the requisite preparations, and giving up their time, in some instances at much personal sacrifice. Their reward will be in your appreciation of, and profit by, their efforts. Our thanks are also due to the authorities of the colleges, who, with their accustomed liberality, have placed their rooms, dining-halls, and kitchens at our service; and our thanks are pre-eminently due to our honorary secretary, Dr. Griffiths, upon whom the arrangements have almost entirely devolved—no light task. His energy and organising ability have, however, proved equal to the occasion, in spite of the distractions—the not inconsiderable distractions—preceding and attendant upon an interesting and important ceremony which took place a few days ago, and the curtailed honey period consequent on it. You will, I am sure, join in hearty congratulations and good wishes on that auspicious event, and also on the fact of his having been this day elected to the surgeoncy of Addenbrooke's Hospital.

I will detain you, Gentlemen, no longer, for you will find in the next room matters more worthy of attention than I can give you. Yet there is one thing further to which, with much regret, I must allude. This morning's papers have told you of the great loss which England and the world at large, more especially the world of science, have sustained by the death of the Right Honourable Professor Huxley, which throws a chill of sorrow over us all. Few persons were gifted with his ability in investigation, with his reasoning power and his power of putting his thought into clear, vigorous, incisive words, whether as a speaker or a writer. He was in the foremost rank of men, and would have been so whatever line he had chosen to take; and in many directions might have gained far more material wealth than in that which he chose to follow. In the last speech I heard him make, at the Royal Society dinner, he told us that an influential relative urged him when he was a young man to go to the Bar, feeling that his talents would find their scope there, but he replied that "his desire was to work out and state truth, not to conceal or pervert it." This was the key-note of his life—kind, genial, humorous, a warm and steadfast friend, loved by those who knew him well, he was stern, even fierce, as a champion of truth. Still, though he might hit hard there was no malice in his blow, and he was respected by opponents as well as followers. All things come to an end, but the good and evil that men do live after them. Huxley leaves much of the former, but, so far as I know, none of the latter, behind him. This sad event necessitates an important change in our evening programme which all of us much regret. Our Professor of Physiology, Dr. Michael Foster, from whom we anticipated the lecture he had kindly promised to give on Wednesday, who was endeared to Huxley by long friendship and many ties, will, we fear, not be free to address you, which I need scarcely say is no small disappointment.[1]

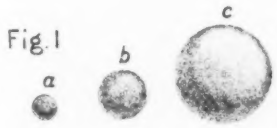
THE PARASITE OF MALARIA AND MALARIAL FEVERS.

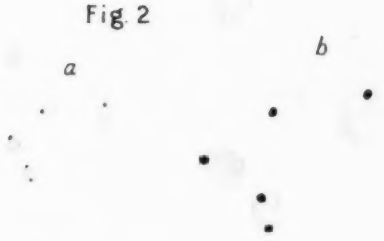
[WITH COLOURED ILLUSTRATION.]

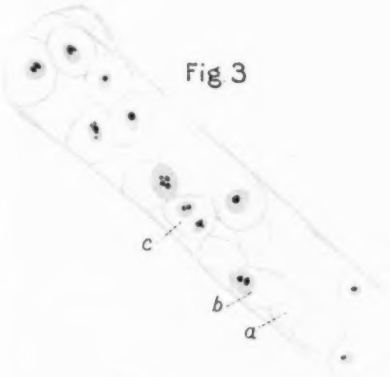
BY GEORGE THIN, M.D. ST. AND.

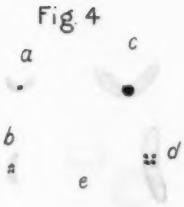
THE remarkable progress of scientific medicine in recent years is characterised by three great discoveries, and in each case by the discovery of a parasite. The mysteries of leprosy and tuberculosis were unveiled by Hansen and Koch, who have shown that the pathological changes peculiar to these diseases are due to bacilli which are essentially distinct, though they have many superficial features in common. Not less remarkable, and certainly of not less practical importance, is the great discovery of Laveran that malarial fever, the perennial scourge of many of the most densely populated countries in the world, is due to an animal parasite, a hæmatozoon, which lives in and destroys the blood of its host. It is difficult to estimate the extent of the destruction of human health and life caused by this minute creature. As a cause of death and of illnesses that undermine the health, it is the predominant factor in populations which in the aggregate can be counted by hundreds of millions. The blood tax which it levies on the inhabitants of the temperate zones who enter the tropics renders the maintenance of our Indian empire onerous and costly, whilst it makes the colonisation of many rich and fertile countries an impossibility. Only those who have lived in fever-stricken countries can form a conception of the extent to which happiness and success are influenced by the poisonous and exhausting effects of this parasite. It was thus to be expected that Laveran's discovery would stimulate the investigations of the Italian pathologists whose close attention had been long given to the malarial fevers which prevail so largely in the peninsula, and it is in Italy that additional facts of great importance regarding the parasite

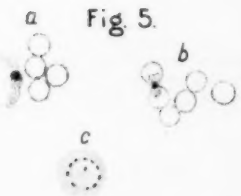
[1] We learn that the change was not necessary, and that Dr. Foster was able to give his lecture as had been arranged.

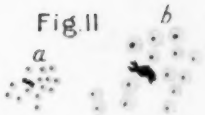


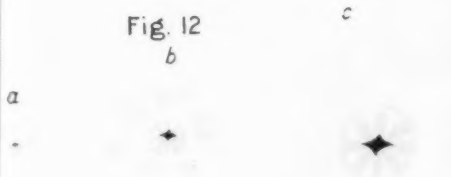


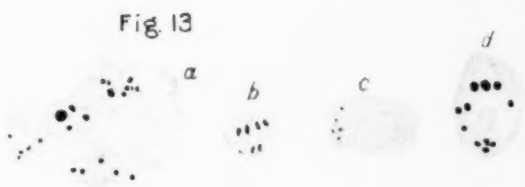












TO ILLUSTRATE DR THIN'S ARTICLE ON THE

MALARIA PARASITE.

and its effects have been discovered and appreciated. It was, therefore, to many of us one of the attractions of the International Medical Congress at Rome last year that an opportunity was given of coming into closer contact with the important work which was being done there in connexion with these fevers than was otherwise possible. In addition to the usual papers and public demonstrations, Professor Marchiafava and his assistant, Dr. Bignami, gave up their time with untiring courtesy to those who, like myself, desired to obtain more detailed information than could be given in the sectional meetings, and, what has been of much importance to myself, they placed at my disposal portions of brain and spleen from malarial patients which enabled me after my return to London to experiment with various dyes in order to satisfy myself as to the most successful methods of demonstrating the presence of the parasite in the tissues. This material has supplemented usefully the examinations of fresh and dried malarial blood which can be obtained in London. During the period which has elapsed since the Congress I have devoted much time to studying specimens of blood taken from the fingers of patients actually suffering from fever, and to staining and examining preparations sent to me from various malarial countries by medical friends. The results of this investigation will, I hope, be eventually brought before the profession. Meanwhile, I trust it will serve a useful purpose if I give the results of my experience regarding the best methods of demonstrating the parasite.

To begin with, I may remark that many good workers with the microscope have failed to see the parasite, and more than one of my friends practising in malarial countries tell me that they have not been able to find it. It is very desirable to appreciate the reasons of this failure, for there are several. First of all, of course, there is the difficulty of recognising an unfamiliar object, but in the present case I am satisfied that this has not been the chief difficulty. The malaria parasite assumes various forms and sizes. Some of these are so characteristic in shape and comparatively so large as microscopic objects that their recognition should present no difficulty to observers with ordinary training and ordinary instruments. Others, on the contrary, are so small in size, and so colourless, and are found for such short periods in the blood taken from the finger, that it is often very difficult to find them at all, and when they are present only a skilled microscopist would recognise them, and only excellent instruments would enable them to be distinguished. These latter forms are specially characteristic of many fevers which occur in the tropics, and that is one reason, I am satisfied, why some of my friends have failed to find them. They did not see them because they were not there at the time when they were looked for; and after a number of ineffectual efforts to observe the parasite in the blood of patients suffering from severe forms of fever the search was given up, although if it had been continued for a sufficiently long time at sufficiently short intervals the stage during which the small parasite could be seen would have been hit.

After Laveran's demonstration of the hæmatozoon came the remarkable and important observations of Golgi, who showed that tertian and quartan agues are due to special and distinct varieties of parasites, having different periods of evolution, and characteristic features which, with a little experience, can be readily distinguished under the microscope. The detection of the parasite in these two classical types of fever ought not to be difficult to anyone accustomed to use the microscope in ordinary clinical work and provided with ordinarily good microscopical apparatus. The tertian parasite during the second day of its development, when there is free pigment formation, and when it fills nearly the whole of the red corpuscle, is not a difficult object to see. Still easier is the detection of the quartan parasite in the later stages of its development, the large central block of pigment after spore formation has begun being a fairly conspicuous object. But the greater proportion of the fevers with which we have to deal either in England or in the tropical countries from which patients come are neither tertians nor quartans. It would indeed be strange if, with the comparative benignity of tertians and quartans, and the readiness with which their parasite is destroyed by quinine, many patients should be found who were not cured long before they reached our shores. In many parts of the south of Europe, in Africa, India, and other tropical countries fevers prevail which are more or less continuous or irregular, or approach regularity with long periods of apyrexia, in which the parasite (with the exception of one form to be shortly noted) is only found in blood from the finger in an early stage, disappearing so rapidly that its existence may easily be overlooked. Fortunately, for the purpose of diagnosis there is in these fevers the exceptional form to which I have alluded. I refer to the crescent-shaped body, so-called "of Laveran" (though why this particular form should be capriciously selected to bear the name of the man who made this immortal discovery, seeing that he saw and described all the other forms as well, is not very clear). The detection of the crescent-shaped body is easy—as easy, if not easier, than that of the fully developed quartan parasite, being found free in the blood, unlike in shape to anything else that occurs there, and being always marked by a central patch of pigment. In addition to these forms, of all of which my experience has been sufficient to enable me to speak with some confidence, I have observed in blood from fever patients sent to me from the West Coast of Africa a minute parasite whose characteristic feature would appear to be the rapid and early development of a small, central, comma-shaped mass of pigment previous to any sign of spore formation. Not having been able to study this parasite in stained preparations I shall have no more to say regarding it, except to add that in the specimens I examined high powers of the best kind were required.

The physician who seeks the aid of the microscope in the study and treatment of malarial fevers must also devote his attention to the appearances presented by the pigment which is found in the white corpuscles. There are cases of severe malarial fever in which repeated examination may fail to find the parasite in blood from the finger, but in which blocks of pigment in the leucocytes testify to the destructive work of the hæmatozoon in the internal organs.

These are the forms with which it is necessary to be familiar if we desire to treat malarial fevers on a scientific basis. The technique is not easy nor rapidly acquired, in this respect, unfortunately, differing much from that which is applicable to the study of the parasites of leprosy and tuberculosis. Having carefully tested the methods which have been recommended by recent writers on malaria, and having made many experiments in order to test the applicability to this study of the procedures employed in histological work, I believe a short account of what may be attained by the use of those methods which I have found best will be useful to others who are working at this subject, and particularly to residents in the tropics, whose comparative isolation renders it difficult for them to test the various methods for themselves. It will be convenient if I treat separately, first, the literature which it will be found useful to study; secondly, the microscopical apparatus necessary; thirdly, the examination of the blood; fourthly, the use of dyes in preparations of malarial blood; fifthly, the staining and studying of sections; and sixthly, add a few remarks on the clinical aspect of the question suggested by the experience of the cases which are seen in England.

1. *Literature.*—The bibliography of malarial fever since the discovery of the parasite has already become fairly extensive. Fortunately, all that is essential for the beginner can be found in small compass. As an introductory work I recommend in the first instance Laveran's book, "Paludism and its Hæmatozoon." The clearness and simplicity of style of this work, its lucid descriptions of the parasite, and the excellent illustrations render it, in my opinion, eminently fitted to interest the reader in the subject. After that comes the useful manual of Mannaberg, "The Parasites of Malaria." This observer has arranged in a systematic form all the knowledge that has been obtained regarding the parasite up to a recent time. He has thoroughly digested the literature bearing on it, has himself added much that is important regarding the minute structure of the parasite, and has offered suggestions regarding certain phases in its development of an attractive and suggestive kind. The numerous and well-executed coloured figures in the four plates which are appended to the book are indispensable to anyone who wishes to pursue the study in its more scientific aspects. It also contains much useful information regarding the technique which it is necessary to acquire. Both these works being translated for the Sydenham Society are available for English readers to whom the French and German languages present difficulties. To many readers Mannaberg's work is almost indispensable for another reason. I know no other book written in English which gives so good an account of the remarkable observations and theories of Golgi, an acquaintance with which is necessary

to anyone who attempts to bring his knowledge of malaria abreast with the results of recent work. None of the summaries of Golgi's papers which are known to me, however, take the place of the original papers of that observer. To those who can read the languages in which they are written I specially recommend the paper published in the *Fortschritte der Medicin*, No. 3, Feb. 1st, 1889: "Ueber den Entwickelungskreislauf der Malariaparasiten bei der Febris tertiana, Differentialdiagnose zwischen den endoglobularen Parasiten des tertianen und denen des quartanen Fiebers," in which it is clearly shown that tertian fevers are caused by a special variety of the parasite, and the points of difference between the tertian and quartan parasites are pointed out. Golgi's original drawings, showing the various phases of these parasites, which have been so often copied since (and not always advantageously), are found in the plate which accompanies the memoir. The *Zeitschrift für Hygiene*, vol. x., 1891, contains his paper on the "Development of the Amœba Malariæ Febris Quartanæ as Illustrated by Photographs." Twelve photographs from blood preparations of quartan fever are printed, in which the size of the quartan parasite and the amount and grouping of pigment which are characteristic of it are demonstrated. The action of quinine on the parasite in its various stages of development is discussed in a paper in the *Deutsche Medicinische Wochenschrift*, 1892 Nos. 29-32: "Ueber die Wirkung des Chinins auf die Malariaparasiten und die diesen entsprechenden Fieberanfälle." Two other papers by Golgi specially deserve study because they apply to forms of fever regarding which our knowledge is still very defective. I refer to a paper on intermittent malarial fever with long intervals, published in the *Archivio per le Scienze Mediche*, vol. xiv., N. 14, under the title: "Sulle Febbri Intermittenti Malariche a Lunghi Intervalli." It is written in Italian, and I am not aware that it has been translated. The other paper, written in French, is on the malarial summer-autumn fevers of Rome: "Sur les Fièvres Malariques Estivo-Automnales de Rome: Lettre du Dr. C. Golgi au Prof. G. Baccelli" (Turin: Hermann Loescher, 1894). This last paper should be read in conjunction with the valuable work published by Marchiafava and Bignami on the "Summer-autumn Fevers of Rome,"[1] which contains a large number of observations on the severe and pernicious fevers which occur at that season in the Roman Campagna. The writers have attempted to reduce these fevers to a system based on the leading idea that they are caused by parasites which they distinguish as malignant tertian and quotidian, the latter having two varieties, a pigmented and an unpigmented quotidian parasite. This work is a storehouse of facts, is admirably illustrated, and its study is indispensable to observers who are engaged in the investigation of tropical fevers. The opinions of the writers have been criticised on clinical grounds by Baccelli, and their observations have been recently reviewed by Golgi in the light of observations made by himself in Rome in the summer and autumn of 1894. In his published letter to Baccelli, Golgi not only shows how far we yet are from possessing an accurate knowledge of the forms of the more malignant parasites whose development takes place in the internal organs, but indicates in a very suggestive manner the lines on which subsequent investigations should take place. The study of Marchiafava and Bignami's work should be followed by that of Golgi's "letter."

It is to be desired in the interests of the medical men who practise in malarial countries that translations of Golgi's papers should be provided for their use. They are too important to be taken at second-hand, and do not receive full justice in the necessarily brief notices which have been given in the more accessible works, but a fair knowledge of their scope can be obtained by reading Mannaberg's Manual.

2. *Microscopical apparatus.*—Although it is possible to see the larger forms of the malarial parasite with an ordinary dry objective of moderate power, its satisfactory study, even that of its larger forms, requires high powers and immersion objectives. This will be evident from a comparison of the drawings made to scale, which I have given in illustration of the next divisions of my subject. Although the observer who has at his disposal a good magnifying power of 500 diameters need not despair of using it successfully, even for purposes of diagnosis, one of the earliest results of its use will be to satisfy him of the necessity of providing himself with higher powers. A good water immersion objective is much better for this work than the dry lenses, but these again fall far short of the advantage to be had by using an oil immersion. Very fair objectives of this kind can now be had at a moderate price, but the cheaper the oil immersion the more necessary it is to have a careful selection made in purchasing one, for undoubtedly these cheap objectives vary considerably in excellence. Where a few pounds extra cost is not of importance I strongly recommend the use of an apochromatic oil immersion by a maker whose name is a guarantee of quality. The advantages which a good objective of this kind possesses are much out of proportion to the additional expense. A magnifying power of 1000 diameters is frequently desirable, and considering that this can only be attained by the use of a high eye-piece, which, of course, magnifies the faults of the objective, it is clear that only systems of great excellence can be satisfactory. An apochromatic oil immersion, then, is the objective which I recommend, and if with a compensating eye-piece, so much the better. But to use a system of this kind a good condenser and a stand to carry a condenser are indispensable, which at once excludes the use of the small Continental models which have so long sufficed for the wants of students in the elementary histological work of practical classes and for ordinary clinical work. For solidity and adaptability of position the English microscope stands are unsurpassed. The apochromatic condenser of Powell and Lealand is admirably suited to bring out the best qualities of an apochromatic oil immersion, and the general utility of the Abbé condenser is well recognised. I cannot too strongly urge those workers who intend seriously to take up this study to provide themselves with a good microscope stand, a good condenser, a good oil immersion, and by preference an apochromatic oil immersion.

3. *The examination of the blood.*—The technique of the examination of fresh blood has been well explained and its importance demonstrated by Hayem in his valuable work, "Le Sang," the perusal of which I earnestly recommend to all those who propose to make systematic blood examinations for any purpose. Blood is so sensitive to the action of any foreign substance that the glasses used should be freed as far as possible from all extraneous matters. Slides and cover-glasses should be rinsed in mineral acids to remove fatty matters, and then in alcohol, or, better, a mixture of alcohol and ether, and not touched with the fingers afterwards. It is convenient to keep them in a bottle of alcohol until required. Only the thinnest cover-glasses should be used. Neither slides nor cover-glasses are perfectly flat, and it is therefore desirable in order to obtain a thin, even layer of blood that the cover-glass should be very fine, the thin glass yielding better than the thicker. It is necessary in order to prevent the formation of rouleaux to make the preparation as quickly as possible after the drop of blood exudes through the epidermis, and it is desirable to have the blood uninfluenced by moisture. To secure these objects the following hints should be attended to: 1. Spring forceps are very convenient for the preparation of dried specimens. The clean, dry cover-glass is grasped with these forceps, which are placed on a table on the left hand. 2. The finger to be pricked should be washed with soap and warm water, well dried, and then dipped in alcohol, which should be wiped off with a clean cotton or linen rag. The patient should be placed slightly to the left of the operator, an elastic band being passed (not too tightly) round a finger of the left hand at the last joint. The swollen bulb is then pricked with a sharp-edged needle, and the assistant (or patient himself) with his right hand wipes off the first drop of blood with a dry linen cloth. 3. The operator, who has a cover-glass held in forceps in his right hand, squeezes the bulb of the finger gently and catches the small drop of blood in the centre of the glass the instant it exudes, and immediately lays it diagonally on the cover-glass which is held by the spring forceps. As soon as the blood has spread out into a uniform layer between the glasses the upper cover-glass is withdrawn from the under one and both are allowed to dry. This is better done with forceps, so that the fingers may not come near the blood; but it is not always easy to withdraw the upper cover-glass with the forceps without breaking it, and the unpractised operator will often be obliged to use the thumb and forefinger for the purpose, which in most cases will not interfere with the preparations being sufficiently useful. The size of the drop of blood is of some importance, particularly in preparations examined fresh; if it is large the corpuscles are massed together; if it is too small it does

[1] Translated by the Sydenham Society.

not spread out sufficiently. Anæmic blood, as would be expected, spreads out more quickly than thick, rich blood. The right size of the drop of blood can be only learned by experience, but it will be found to be a very little larger than the head of a pin. If the preparation has been well made the red corpuscles will be found separate from each other, with sufficient space between each to admit of easy observation. Very often one part of the preparation will be useless, while the other part is good. For fresh preparations the charged cover-glass is laid immediately on the clean slide, and several should be made. Before taking a second drop of blood the bulb of the finger, which has been moistened by the previous drop, should be thoroughly dried with the linen cloth. The bulb is then again squeezed and the drop of blood taken as before. To prevent alteration of the blood by evaporation it is well to seal up each preparation as soon as it is made, which is easily done by brushing round the edges lightly with melted paraffin of a high melting-point. A small piece is melted over a spirit-lamp, and a fine camel's hair brush, after being dipped in it, is quickly drawn round the edge of the cover-glass, care being taken that the paraffin overlaps both the glasses. It dries almost immediately and the preparation is available for examination for hours afterwards. In examining fresh blood for the parasite the points to be looked for in the red corpuscles are alteration in size and defined clear spaces of various shapes with or without pigment. In the corpuscles the presence of pigment in these spaces is indicated either by very minute separate particles or by small rod shapes or by clumps, and the movements seen in the earlier stages of the parasite are indicated by the rapid changes in form of the clear outlines. In the mature parasite, in which spore formation is taking place, the corpuscle is found to be filled with a round colourless body dividing into spores, with the pigment at the periphery or in a block in the centre, or passing in lines towards the centre. In the stage between that of the small, round, clear parasite which has recently attacked the corpuscle and the fully developed stage in which spore formation begins to take place, minute grains of pigment are found in active motion. This appearance is very characteristic and cannot fail to catch the eye even of the inexperienced observer. The pigment is coarser in the quartan than in the tertian parasite, slightly lighter in colour, and with much more sluggish movement. The coarser pigment, the small number of spores—usually about eight—and their larger size, and the fact that the affected corpuscle does not increase in size are the distinctive features of the quartan as compared with the tertian parasite, the increase of size of the red corpuscle, its rapid discolouration, and the swiftly moving pigment being the chief appearances to be noted in corpuscles which harbour the latter. If it is a case of tertian or quartan with which the observer has to do he will not have much difficulty in detecting the parasite, more particularly if he examines about eight or ten hours before the attack. In cases of double tertian he will find it still more easy on account of the different stages of development which he will observe at the same time. But if he has to do with a case of the more malignant forms of malaria, or the chronic irregular tropical fevers, he may have great difficulty in observing the parasite, which in these cases is very often found only at long intervals in the blood from the finger, and then only for the short time that it is in the condition of the small, round, colourless amœba, without pigment and either in motion or motionless; or, in addition to this colourless state, the parasite may be indicated by the presence of small clear spaces in the corpuscles containing minute rod- or comma-shaped pigment forms or surrounded by a very small amount of pigment in fine grains. In these cases he will not observe the large parasite filling up a considerable portion of the corpuscle or dividing into segments. In this class of patients the diagnosis is rendered much easier by the observation of two appearances of a different kind. The crescent form, lasting over a longer or a shorter period, is usually found in these fevers if persistently looked for and can be easily recognised. Also, during a period not well defined for these fevers, white corpuscles may be found containing rounded or irregularly shaped blocks of pigment. Both these appearances are characteristic.

It is in the examination of fresh blood that high-power objectives of fine quality are more especially necessary. The small colourless parasite may be easily confounded with vacuoles in the red corpuscle, and their detection requires the combination of a certain amount of experience and good optical apparatus.

4. *The use of dyes in preparations of malarial blood.*—The use of stained dried blood preparations is not only valuable for confirmation of inferences drawn from the appearances seen in the fresh blood, but possesses special additional advantages, which render it, in my opinion, indispensable. I will therefore describe what I have found in my own experience to be the most satisfactory methods of staining the parasite, after having tried most of the methods recommended in Mannaberg's monograph and many of the dyes and staining processes described in Lee's useful work, "The Microtomist's Vade-Mecum," a book I cannot too highly recommend to those who are engaged in any kind of microscopical work in which the use of dyes plays a prominent part. To save space I shall only notice the methods which, so far, I have myself found most useful.

The cover-glasses which are destined for staining, after being prepared as I have already described, may be placed with advantage in absolute alcohol for three minutes before the blood has become quite dry, although this is not quite necessary. When dry they are wrapped in soft paper and put aside for subsequent use. The most convenient dye is the well-known combination of eosin and methylene blue, but it is far from being a matter of indifference how these dyes are used. Eosin is an acid and methylene blue a basic colour, and when used successively one may destroy the other unless the exact time and strength are hit. For this reason I found that using the dyes one after the other was very troublesome, and not so serviceable as the use of methylene blue alone—as, for example, Löffler's alkaline solution;[2] but the eosin has the advantage not only of being a contrast to the blue, but, from its property of staining hæmoglobin, it facilitates the distinction of a red corpuscle containing a round-shaped parasite from the small mono-nuclear white corpuscles. It is well, therefore, to use a mixture of the two dyes in proper proportions. After trying various formulæ I have found Chezynsky's the best for general purposes, which is made by mixing "half per cent. solution of eosin in 70 per cent. alcohol, 20 parts; concentrated solution of methylene blue in distilled water, 40 parts; water, 40 parts."[3] In preparing this mixture I think the precise strength of the alcohol is of importance.[4] For "concentrated" solution of methylene blue it would be more precise to write "saturated" solution. I have found the results most satisfactory by taking care that the solution of blue was really saturated. Some of this solution is filtered into a watch-glass, and the cover-glass with the blood surface downwards is floated on the fluid. The length of time which should be allowed for the staining is, I think, generally understated, and depends on the temperature. I generally use an incubator at a temperature of about 98° F., and at this heat a quarter of an hour to about twenty minutes amply suffices; at room temperature half an hour to two hours may be found necessary, according to the time of the year. If the preparation is an important one it is advisable to watch the staining process by washing off the dye occasionally with distilled water and looking at it unmounted with a low power, putting it back in the dye if necessary, until the requisite degree of staining is obtained. When this has been found the cover-glass is washed in distilled water and allowed to thoroughly dry, and is then mounted as a dried preparation, being kept in position on the slide by a margin of melted paraffin brushed round it in the manner I have described for fresh blood. It may be examined at once or after a period of weeks. After a little practice the parasites can be easily picked out in such preparations with a very low power. For this purpose I use successfully a low-power objective with Powell and Lealand's No. 10 compensating eye-piece. This gives me a very large, clear field, the magnifying power being 210 diameters, and the blue-stained parasite stands out distinctly and boldly (although a very minute object) in the red corpuscle. When a parasite has been found it may be examined by a high-power objective, an $\frac{1}{8}$th or higher, when the pigment, if present, should be seen more or less distinctly according to its fineness and distribution; but

[2] Thirty cubic centimetres of saturated solution of methylene blue in alcohol: 100 cubic centimetre solution of potash of strength 1 in 10,000.

[3] It is very important that aniline dyes should be pure. Dr. Gruebler of Leipzig supplies them in a reliable condition for histological purposes, and Dr. Kanthack, 21, Golden-square, London, W., acts as agent for the supply in England and will forward any of the dyes or solutions referred to in this paper.

[4] Seventy per cent. alcohol is made from methylated alcohol, which must be free from naphtha, by diluting 100 measures to 121; from absolute alcohol (0·793) by adding 34½ volumes of water to 100 volumes of the alcohol. In working with aniline dyes it is best to avoid the use of methylated alcohol.

for satisfactory examination, particularly as regards the stage of development of the parasite and the distribution of the pigment granules, an oil immersion objective should be used.

For the size and form of the parasite and its relations to the red corpuscle, and for the presence and condition of the pigment, the use of methylene blue and eosin is sufficient. Eosin is particularly useful in showing the poverty in hæmoglobin of the large, swollen red corpuscle which harbours the tertian parasite. In order to render the detection of the parasite by this method easier to those who are beginning the work I have thought it useful to show by definite outlines, drawn to scale, the size of the objects which have to be looked for, according to the magnifying power which is used. Although I recommend every observer to provide himself with apparatus which will give him a magnification of 1000 diameters, it must happen to many to be obliged to use a lower power, at all events for a time. I have therefore made the drawings which are printed in the accompanying plate chiefly to two scales, one of 500 and one of 1000 diameters; 500 diameters being within the reach of most—even of the commoner—microscopes, if the highest system with which they are provided is of sufficient quality to bear a fairly high eye-piece. For the finer details of the structure of the parasite, more particularly of the spores, hæmatoxylin should be employed. It is by the use of this dye that Mannaberg has made a distinct advance in our knowledge of this difficult subject. The process which he recommends, although apparently somewhat complicated, is not difficult to carry out. "The dried preparation is floated for five minutes in distilled water, and after being dried with blotting-paper is passed several times through a weak solution of acetic acid (a drop of acetic acid in twenty centimetres of distilled water) until the hæmoglobin disappears. The colourless preparation is then laid for two hours in the following fixing fluid: concentrated aqueous solution of picric acid 30, distilled water 30, glacial acetic acid 1. From this mixture it is placed for another two hours in absolute alcohol, and then placed from twelve to twenty-four hours in an alum hæmatoxylin solution. Differentiation of the stain is effected by using a quarter per cent. hydrochloric acid alcohol (alcohol of 75 per cent.) and then ammoniated alcohol (3 drops of ammonia in 10 cubic centimetres of 75 per cent. alcohol), which is washed out in 80 per cent. alcohol. The preparation is mounted in Canada balsam dissolved in xylol." The process is a tedious one, and care must be taken regarding the strength of the hydrochloric acid alcohol. If the ammonia is used too strong, or for too long a period, it acts very destructively. Unless the preparation is allowed to dry thoroughly before mounting in balsam I recommend a stronger—say, absolute—alcohol. Some of the most interesting appearances shown in Mannaberg's book, such as those in the Plates III. and IV., were obtained by this process, and these drawings cannot be neglected by anyone who studies the structure and development of the parasite. I have made some experiments with the view of ascertaining whether we cannot get similar results by a simpler method. These are not quite finished, but so far as they have gone they show that the selective action of hæmatoxylin on the chromatin of the spores can be obtained by a shorter procedure. It had been known for some time that appearances indicative of nuclear structure could be observed, particularly in the large spores of the quartan parasite, and Mannaberg has shown by his methods that nuclear structures can be clearly stained in the spores of the tertian parasite. I have found that the same appearances as those described by Mannaberg can be demonstrated by the simple use of hæmatoxylin, and, as I shall subsequently show, the same structural appearance can be brought out in the parasite of perniciosa comatosa by an analogous method. For this purpose I recommend the use of Mayer's hæmalum instead of the ordinary hæmatoxylin solutions, according to the formula given in Lee's Vade-Mecum. One gramme of hæmatein dissolved by heat in 50 cubic centimetres of 90 per cent. alcohol is added to a solution of 50 grammes of alum dissolved in a litre of distilled water. The mixture is allowed to cool and settle, filtered if necessary, and a crystal of thymol is added to preserve from mould. The preparations are placed in this dye until sufficient staining is produced, or, which I think is better, until the preparation is considerably over-stained, the excess of colour being then removed with a half per cent. solution of alum. After washing with water the preparation should be further placed for a few seconds or a minute (it is easily overdone) in a weak solution of eosin, in order to stain the hæmoglobin of the red corpuscle. If the eosin is used sufficiently diluted the desired tint can be obtained without excess of colouring, and the hæmalum stain is not obscured, the result, I think, presenting some advantages over the absolute decolouration by Mannaberg's method. As the object in this mode of preparation is to bring out the extremely small nuclear elements it is obvious that it is useless except when very high magnifying powers are used. In preparations stained in this way, and examined by Powell and Lealand's apochromatic $\frac{1}{12}$th oil immersion (numerical aperture, 1·40), with No. 10 compensating eye-piece, the chromatin elements described by Mannaberg as nucleolus and the surrounding protoplasm of the spore can be distinctly seen. In order to obtain sufficient enlargement to make these points clear in the Plate I have made some camera lucida drawings of the tertian sporulating parasite with Powell and Lealand's apochromatic $\frac{1}{12}$th (numerical aperture 1 40), with the No. 10 eye-piece, which gives a magnification of 2000 diameters, whilst retaining sufficiently good definition to enable the details of the preparation to be clearly seen. A more easily managed contrast stain than eosin, which I have so far used more in sections, but which deserves to be more tried in preparations of the kind with which I am now dealing, is Mayer's cochineal, which, like eosin, stains the hæmoglobin of the red corpuscle. Eosin, when used a little too strongly, stains also the protoplasm of the white corpuscle, and the difference between the red and the white corpuscle is then less marked than when cochineal is used. This dye leaves the protoplasm of the white corpuscle unaffected, and it is useful in some cases to be able to distinguish easily and with certainty in stained preparations the red corpuscle from the small mononuclear or the lymphoid white corpuscle. The presence of pigment in the white corpuscle is valuable as a diagnostic mark, and can be well studied in blood preparations and sections stained with eosin and methylene blue. The drawings (Fig. 13, *a*, *b*, *c* and *d*) show the form and size which it frequently assumes.

5. *The staining and studying of sections*.—The staining of sections of malarial tissues is very useful, as it is from this line of research that we must look for information regarding the life history of the parasite (from the clinical point of view very important) which produces the deadly fevers occurring mostly in the tropics, and which have given to malaria its most terrible significance. Golgi in his letter to Baccelli (p. 44) refers to a case in which during life blood from the finger gave constant negative results, whilst blood from the spleen showed a great number of parasites in different phases of development. So far as he could judge from the examination of the specimens (incomplete at the time he wrote), the affection was localised exclusively in the spleen. He refers to another case, in which a surprising localisation of the malaria parasite in all its phases of development was found in the intestine, whilst in the other organs the number was either very few or there were none at all. Similar specimens were shown by Marchiafava at the Congress at Rome. Golgi suggests the question whether the parasites which are found in these malignant fevers in the medullary or splenic cells, instead of undergoing a process of phagocytosis, are not undergoing in these cells a process of development, accomplishing there a true endocellular cycle. It is clear, then, how important it is that the post-mortem tissues should be examined under the best possible conditions. This is a part of the subject to which I can contribute very little, my experience being limited to a prolonged series of experiments in staining, made on sections of the brain and spleen prepared from tissues from cases of perniciosa given to me by Professor Marchiafava and Dr. Bignami when I was at Rome last year. As Dr. Bignami has had a large experience in the examining of malarial tissues, I quote from his "Ricerche sull' Anatomia Patologica delle Perniciose" (Estratto dagli Atti della Accademia Medica di Roma, anno xvi., vol. v., serie ii.). "In the greater number of cases tissues have been fixed in absolute alcohol, some in the liquid of Kleinenberg, some in perchloride of mercury. The best methods are fixation in absolute alcohol, and fixation in 1 per cent. solution of perchloride of mercury in distilled water, to which ¾ per cent. sodium chloride and from ½ to 1 per cent. acetic acid are added. This fluid combines the conditions of Carnoy's and Deny's liquids. It penetrates easily into tissues, fixes them rapidly, preserves the red corpuscles without removing the hæmoglobin, a distinct advantage in studying the endoglobular parasite. In this solution, which I have found

more especially useful in studying the speen and the medulla of the bones, the portions of the tissue remain for a quarter of an hour to an hour, or several hours, according to size, and are then passed through iodised alcohol, and finally to absolute alcohol." I would suggest that the portions hardened should be small in size, say not larger than half an inch cube, and those which are to be kept some time should, when sufficiently hardened in absolute alcohol, be preserved in 70 per cent. alcohol. The brain, the spleen, and the liver are best cut by the paraffin process, the success of which depends on a number of details which are very well explained in Lee's book. After trying a great many methods of staining by aniline and other dyes, I have come to the conclusion that for the demonstration of the parasite nothing is better than the various solutions of methylene blue, with or without eosin. Some of the substitution methods which are described in Lee's book are useful in showing the composite character of the chromatin elements in the early stage of the parasite and I would specially recommend that by vesuvin and gentian violet for this purpose. For the study of the nuclear structures, however, I have found hæmalum better than any of the other dyes I have tried, and the best results I have got were obtained by double staining in hæmalum and cochineal. The method which was most successful consisted in long staining with hæmalum, a day or even longer, and washing out the excess of colour by soaking in ½ per cent. solution of alum; the section is then washed in water and stained slowly in cochineal. The cochineal as a contrast stain has been for this purpose, in my hands, better than eosin, being less intense and more selective. The tissues with which I experimented had been kept for a considerable time in alcohol, and sections of the brain and spleen with many dyes did not show a trace of the red corpuscles, the parasites being represented in the apparently empty capillaries by very minute, round, stained bodies, which Mannaberg would call the nucleolus, and which can be seen by a good objective to be composed of minute, round, separate points of chromatin. In similar sections treated by cochineal the contours of the red blood-corpuscles were well marked, and the more deeply stained parasite could be seen within the corpuscles. (See Fig. 3.) In very successfully stained preparations of the brain the parasite, which, in the tissue examined by me, was still in an early stage of development, could be seen to be composed always of two and sometimes distinctly of three parts, the chromatin made up of fine points very darkly stained by the hæmalum, the protoplasma mantle slightly stained, and occasionally between the nucleolar chromatin and the protoplasma mantle a small unstained space, the appearance being similar to that figured by Mannaberg in the spores of the tertian parasite. The advantages of this method of staining consist in bringing out successfully these separate elements. In the various illustrations which I have seen of the parasite of pernicious malaria, as observed in the capillaries of the brain, I have not noticed these three elements figured, and although analogy would lead us to expect to find them, it is satisfactory to be able to bring them under direct observation. They can be very clearly observed by Powell and Lealand's apochromatic $\frac{1}{12}$th, but from the small size of the bodies I have thought it better to draw them as seen when very highly magnified. The drawing in the plate (Fig. 3) to the scale of 2000 diameters was made by using Powell and Lealand's apochromatic $\frac{1}{10}$th oil immersion with the No. 10 eyepiece. The size of the red corpuscles in the drawing, compared with that shown in Fig. 1, *c*, will give an idea of the shrinking which had taken place from the action of the alcohol, but it does not follow that the parasite had shrunk in an equal degree with the corpuscular substance. The fullest representation of the parasite of malignant malaria (perniciosa comatosa) with which I am acquainted is given in one of the plates in Bignami's paper already referred to, "Ricerche sull' Anatomia," &c. Both the pigmented and the unpigmented parasite of pernicious quotidian, as seen in the bloodvessels of the brain, are copiously illustrated in these plates, all the stages of development being represented.

Cases of chronic malaria in which the crescent form of the parasite is found often present a difficulty caused by the small number of parasites which can be observed in blood taken from the finger. A person in whom there is no history of febrile symptoms for several weeks, who possibly considers himself well and free from fever, betrays by the pale lips, creamy conjunctiva, and general bloodless expression the probable existence of chronic malarial poisoning. Examination of blood from the finger will probably show no endoglobular parasites, and no pigment-bearing white corpuscles may be observed. If a crescent parasite is seen the diagnosis is easy, but a short examination may show no crescents, and the long, repeated examinations which are necessary to settle the point may become extremely irksome to a man actively engaged in practice. It occurred to me, therefore, to try some method by which large drops of blood could be examined, so as to greatly multiply the chances of detecting crescents, and after a considerable experience I can recommend the following procedure. If a small drop of filtered saturated solution of methyl green, to which 1 per cent. of acetic acid has been added, is placed on the slide, and the cover-glass with the freshly drawn blood is placed over it, the drop of methyl green solution mixes rapidly with the drop of blood, and after sealing with paraffin the preparation is ready for examination. What has happened is this—the hæmoglobin is no longer visible, and the decolourised red corpuscles, being only detected by their fine contours, no longer impede observation, and if any crescents are present they can be readily picked out by a low power. The white corpuscles are seen as round bodies bounded by a thin line, their protoplasm is almost colourless, and their nuclei are stained pale green. The crescents when present are easily detected by the central accumulation of pigment, the body of the parasite being seen as a smooth, cleanly contoured body of a pale green colour. (See Fig. 5, *a*, *b*.) Some of the crescents appear to undergo very little change in this solution, others appear to be considerably shrunk, the more stable portion of the parasite being that which is next to the central pigment. I have added a weak chromic acid solution to this mixture, and I have also mixed it, with and without weak chromic acid solution, with glycerine without notably modifying the results. I have found, in a preparation in which glycerine had been mixed with the solution, that the crescents lost nothing in their definition and colour for some months. After eleven months the contour and definition were well marked, but the colour was much faded. This method, then, is useful for permanent preparations, but, as paraffin is apt to crack, it is well to brush Bell's cement over it if they are to be kept. The ordinary forms of endoglobular parasite can also be observed by this method, but so far I have used it chiefly, and most successfully, in searching for crescents.

6. *Remarks on the clinical aspect of the question.*—The utility of examining blood for the malaria parasite in cases of fever is too evident to be enlarged upon, but its utility is much greater in some classes of cases than in others. It does not require a microscope to diagnose or treat successfully a case of classical ague, or even many of the cases of irregular and remittent fevers which are due to malaria, although microscopic observation is much more important in them than in tertian and quartan fevers. It is certain, however, that even in malarial countries many cases of fever are diagnosed and treated by skilled and experienced observers as of a malarial nature which are really due to other causes. There are cases in which a considerable time must elapse before the diagnosis can be made from the clinical symptoms alone. I conceive that it is very important to use the microscope in cases of so-called "fever from exposure to the sun," and I am afraid that occasionally cases diagnosed and treated as sunstroke are examples of pernicious malaria with coma. In all doubtful cases of fever, therefore, occurring in countries where, for example, the diagnosis may lie between typhoid fever and malaria and "sun fever," the microscope should be used, and it should also be employed for diagnostic purposes in many cases of coma with acute febrile symptoms which might perhaps more naturally suggest sunstroke. Very important is it to use the microscope in cases of a different class. Persons who have suffered from malarial fevers in the tropics and who have returned to England frequently suffer from what they believe to be malarial attacks, for which they take quinine, often in large and unmeasured doses. On simply clinical evidence, and long before I knew anything of the malaria parasite, I had satisfied myself that the great majority of these cases were not cases of malarial fever at all, and that the use of quinine was injurious. In many of these patients there is a slight daily rise in temperature, but in others it remains subnormal, notwithstanding that the symptoms of malaise, weariness, and aching pains in the bones are very similar to the symptoms with which they were familiar as accompanying the true attacks of malarial fever

which they had in the tropics. Hence nothing can be more natural than that they should imagine that they have the same fever, and, if there is a slight rise in the temperature, it is equally natural that the medical attendant should be of the same opinion. By the use of the microscope I have satisfied myself that my belief as to the non-malarial nature of these cases was correct. Shortly after I began these investigations a young man was sent to me by a physician long experienced in tropical diseases as a subject well fitted to afford material for the study of the parasite. His bloodless look and shattered appearance gave me the same impression, and it was with some surprise that I found no trace of the parasite in his blood. Not content with one or two fruitless examinations, I spent a considerable time in examining his blood daily for a week, but always with a negative result. Looking back on the case now, I recognise that what this young man suffered from was not the malarial parasite in his blood, but the damage done to the viscera before he left India by the parasite which he then harboured. Quinine is of course useless in such cases. Quite recently a former patient, an anæmic, feeble man, was affected whilst in the country by chill. There was a daily rise in temperature, malarial fever was diagnosed, and he was treated by large doses of quinine. His condition did not improve, and when I saw him in London some weeks afterwards an examination of the blood, both before and after the slight daily rise in temperature, afforded no evidence of malarial disease. These are only examples of other cases of a like nature. My observations on the cause of the symptoms in this class of cases are yet so incomplete that I hesitate to use them in suggesting an explanation of the symptoms, but I hazard the theory that in most of them the discomfort, debility, and febrile accesses are associated with the damage sustained by the blood-forming organs when the patients suffered from malaria in the tropics. The destructive action of the malarial parasite on the tissues of the spleen, the liver, and the bone marrow have been well worked out and described, particularly by Bignami, and there is no doubt that in a certain proportion of these cases this damage is never thoroughly repaired.

Whether these people are well or ill, I find they are more or less anæmic, the change in the number and condition of the corpuscular elements of the blood being sometimes very marked. When they get chilled or suffer from continuous cold weather, or undergo much fatigue or experience depressing mental emotions, they become affected with many of the symptoms which are associated with the febrile state, and there is often a rise of one to two degrees of temperature. Quinine does them no good, but if they remain in bed for two or three days, and take an appropriate diet, the symptoms usually soon disappear. It is the frequent recurrence of these symptoms that has led to the idea that persons who have had malarial fever remain always liable to fresh attacks, even after they have returned to temperate climates. I am satisfied that not only is this not the case, but that a great proportion of the persons who have suffered from malarial fever in the tropics, particularly those who are not aged and are naturally robust, recover perfectly within a comparatively short time. I am familiar with many instances of men who have been sent home on account of fever and have recovered entirely before reaching England, and have never had another attack. To assume that all persons who have once had malarial fever are liable to it in the future is an assumption that is not based on evidence. On the other hand, we see in London two classes of true malarial fever. There are cases in which the patient may have recovered to some extent on the voyage home, but is seized shortly after his arrival in England with well-marked and often severe symptoms of fever, in which the nature of the disease is manifested both by the high temperature and the detection of the parasite in the blood. These cases, it is needless to remark, are more or less amenable to quinine, according to the dose and the manner in which it is administered, and as very large doses of quinine are sometimes required it is important to be fortified in the diagnosis by the detection of the parasite. Looking back on the pre-parasite days I can recollect the anxiety with which I recommended thirty grains of quinine daily for a small delicate woman dangerously ill from severe malarial fever which she had contracted in the south of Spain; twenty grains of quinine a day had been given by the medical man with whom I saw her without effect. Her condition being critical, I advised that the dose should be increased to thirty grains daily, with the result that there was a speedy fall in the temperature and a final cure. I can recall a similar case in a man from Mexico, who although not dangerously was seriously ill, and in whom the fever, which did not yield to the doses usually given in malarial fever, also yielded satisfactorily to a larger dose. The microscope is now a great stand-by in dealing with such cases, by giving much needed confidence when unusually large doses are indicated. Another class of case which we see in London is of a very different kind. The patient either has no febrile symptoms, or has them at such long intervals that he may possibly not suspect that he has fever at all. Last summer I was consulted by an officer who had contracted fever when on a shooting expedition in the jungle in India. He treated himself with quinine, and after a week the acute symptoms disappeared and he considered that his fever was cured. He had nothing to complain of except that he was supposed to have had a deranged liver for some days on his way home, but his listless manner and marked anæmic appearance impressed his relatives so strongly that they recommended him to consult me. Microscopic examination showed at once the presence of a fair number of crescents in his blood. I sent him to Scotland, where, about three weeks afterwards, he had a distinct febrile attack which I have no doubt was malarial; but under the judicious use of arsenic and iron and moderate doses of quinine he recovered a healthy appearance, and two months later one long examination failed to show any malaria parasites in his blood. As he remained in good health he shortly afterwards returned to India. Two other cases may be briefly quoted as types of the cases in which the crescent form is found. A young man who had acquired fever in Bombay, the attacks being characterised by much nausea and vomiting, had not had for a considerable time any active febrile symptoms or rise of temperature, but his extreme pallor and great weakness were strongly indicative of the slow destructive effect of some noxious agent upon the blood. Continuous diarrhœa, which had lasted for weeks, yielded at once to exclusive milk diet. Crescents were found for about a fortnight, and although I examined his blood every two or three days during that time I only once found another form of the parasite. He was liable once in two or three weeks to attacks of fever, the chief symptom being frequent retching, with great debility and malaise, lasting for two days. After one of these attacks I found on one occasion a considerable number of small colourless amœbæ attached to the surface of the red corpuscles, some of them simply round, some of them ring-shaped—a form of parasite which can only be recognised with certainty by the use of high powers and a good objective, and which might easily be confused with the vacuoles in the red corpuscles. I refer to another case chiefly with the object of indicating the treatment under which the patient recovered. This man had acquired fever in India some six months previously, the disease being attended at the outset with severe continuous febrile symptoms and great nausea and vomiting. After about a week his febrile symptoms abated, but he had never been quite well since the beginning of the attack, and every twelve days he was prostrated with symptoms of fever, always accompanied with severe vomiting. I examined the blood three times at intervals of five or six days when no fever was present, and each time found crescents but no other form of parasite. He had taken much quinine during the six months his illness had lasted, and, as it was possible to calculate with some certainty the time that the fever would recur, I recommended him to take twenty grains of quinine daily in two ten-grain doses for two days before the next attack. This did not prevent the expected attack, but I directed him to repeat the same dose in the same way two days before the next expected period of recurrence. This time the attack did not appear, and he entirely regained his health. It is difficult to be sure which of these doses of quinine cured him, but, judging by analogy from Golgi's observations on the action of quinine on the malarial parasite, it is probable that, although the first series of doses did not prevent the attack, the brood of young amœbæ succumbed to the effects of the quinine which was in the blood when they were set free. The favourable action of the quinine was probably assisted by the return of the patient to the climate of England.

The slight sketch which I have given of these few illustrative cases will suffice to indicate the improved position we now occupy in treating cases of malarial fever in the light

afforded by microscopical examination of the blood. Unfortunately the technical skill needed for this examination can only be acquired by serious application to a study which has many difficulties and pitfalls. These can, however, be overcome by any medical man living in a malarial country who will give sufficient time to the subject and will provide himself with the necessary apparatus. I hope the hints that I have given in this paper, which are based on my own experience, may prove useful to workers who are absent from great centres and by whom all technical work must be carried on at a disadvantage. It is my pleasant duty to record my obligation to my friend Dr. Marshall of Rio Tinto, who has been a zealous coadjutor in this study for more than a year, and who has furnished me with much valuable material.

EXPLANATION OF THE PLATE.

Fig. 1.—A red blood-corpuscle from fresh normal blood, drawn to scale by camera lucida, to form a standard for comparison with the figures of dried and stained blood which follow. (The colour of the fresh blood is not reproduced.) *a*, × 500 diameters; *b*, × 1000 diameters; and *c*, × 2000 diameters. (In this and the subsequent figures the objectives employed were, for the 500 diameters, a dry objective by Powell and Lealand; for the 1000 diameters Powell and Lealand's apochromatic $\frac{1}{12}$th oil immersion with the No. 10 eye-piece, or the $\frac{1}{16}$th apochromatic oil immersion of the same makers with a low eye-piece; for the 2000 diameters the $\frac{1}{25}$th with No. 10 eye-piece.)

Fig. 2.—Blood from a dried preparation stained in hæmatoxylin and mounted in glycerine; chronic irregular fever; sporulation in internal organs. The blood, which is from the finger, shows the red corpuscles being attacked by the parasite in its earliest stage. In one corpuscle two parasites are observed. The part chosen for drawing contained an unusual number of affected corpuscles. *a*, × 500 diameters; and *b*, × 1000 diameters.

Fig. 3.—A bloodvessel from a section of a portion of brain given to me by Dr. Bignami from Professor Marchiafava's laboratory in Rome. The section, which was cut in paraffin, was stained in hæmalum and cochineal. *a*, a red corpuscle containing no parasite; *b*, a red corpuscle containing an eccentrically situated parasite; *c*, a red corpuscle containing two parasites. The protoplasm of the parasite is stained a deep pink, the nuclear elements a very dark purple. (In this and similar preparations the resolution of the stained nuclear elements into separate minute spheres depends to a considerable extent on the excellence of the objective used). The darkly stained nuclear elements of the parasite as shown in this figure must not be confounded with pigment. No pigment was observed in the section, and the case was therefore probably one of quotidiana perniciosa caused by the pigmentless quotidian parasite described by Marchiafava and Bignami.

Fig. 4.—The crescent-shaped form of the parasite found in the blood in irregular chronic fever. The dried blood from the finger was stained by hæmalum in excess, and subsequently partially decolourised by weak hydrochloric acid. (See Mannaberg's process, as described in the text). *a*. The parasite with arc-shaped line indicating the contour of the red corpuscle in which it had developed. *b*. Free parasite × 500 diameters. *c* and *d*. The same × 1000 diameters. *e*. Red corpuscles in the same preparation × 1000 diameters.

Fig. 5.—Crescent-shaped parasites in the blood, sealed in solution of methyl green in 1 per cent. acetic acid. The colour of the methyl green is not shown in the plate. *a*. A crescent sealed in the solution, to which a little glycerine has been added. *b*. A crescent in the solution without glycerine, drawn shortly after being sealed. Many crescents seen in this staining solution have the shortened, mutilated appearance shown by this one. The red corpuscles, which are much shrunk in size, are quite colourless, and are indicated only by very fine lines, much fainter than is shown in the drawing. The magnification in this figure was not accurately estimated, but that of *a* is about 700 to 800 diameters, and that of *b* nearly 1000. The red corpuscles in *b* had shrunk more than those in *a*. *c*. A red corpuscle containing a round parasite with peripheral pigment from a case of irregular fever with the formation of crescent bodies. Sporulating forms were not found in blood from the finger. This drawing is shown under this figure because it is typical of forms that are found (in my experience, sparingly) in cases with crescent formation. The drawing was not to scale by camera lucida, but the magnification is slightly over 1000 diameters; eosin and methylene blue.

Fig. 6.—A red corpuscle containing the tertian parasite before the formation of pigment; eosin and methylene blue; the parasite is stained blue. × 1000 diameters.

Fig. 7.—A red corpuscle containing the tertian parasite with the beginning of pigment formation and two normal red corpuscles beside it; eosin and methylene blue. The larger size of the corpuscle which contains the parasite is to be noted. × 1000 diameters.

Fig. 8.—A red corpuscle containing the parasite in a more advanced stage of pigment formation. Note the serrated appearance at one part of what remains of the red corpuscle, caused by the destructive action of the parasite. × 1000 diameters; eosin and methylene blue.

Fig. 9.—The tertian parasite with spore formation and central pigment. The number of spores is unusually small for the tertian parasite. Note the disappearance of the hæmoglobin from the red corpuscle and its comparatively large size as compared with the normal corpuscles around it, which appear to have been considerably shrunk by the drying process. × 1000 diameters; eosin and methylene blue.

Fig. 10.—*a*. A red corpuscle containing the tertian parasite with spore formation complete; hæmalum and eosin. The nuclear element of each spore is stained by the hæmalum. × 1000 diameters. *b*. The same × 2000 diameters. Note the contour of the perfectly colourless red corpuscle, and that in the parasite between the spore zone and the mass of central pigment there is a structureless substance less deeply stained than the spores.

Fig. 11.—The tertian parasite. A group of spores just separated from the corpuscle; hæmalum and eosin. The position of the central mass of pigment shows that the relative position of the spores has been comparatively little changed by drawing the one cover-glass over the other in making the preparation. Each spore contains a distinct hæmalum-stained nuclear element. *a*, × 1000 diameters; *b*, × 2000 diameters.

Fig. 12.—Sporulating form of the quartan parasite stained by alkaline (Löffler's) methylene blue. Sporulation is complete, with central pigment. *a*, × 500 diameters; *b*, × 1000 diameters; *c*, × 2000 diameters. Note in *b* and *c* that there is still a narrow rim of corpuscular substance preserved, that the spores are the usual number in this parasite (8), that the corpuscle which contains the parasite is hardly larger than the unaffected red corpuscles which surround it, and there is an absence of the zone between the spores and the pigment which is seen in the tertian parasite.

Fig. 13.—*a*. Phagocyte white corpuscle containing small pigment spheres. The patient was suffering from chronic malaria, acquired in Bombay. He was weak and anæmic, his spleen was slightly enlarged, and at considerable intervals he had slight fever, lasting for a day at a time. I found no parasite in the blood from the finger, but several pigment-bearing white corpuscles. The figure was drawn by camera lucida from a sealed preparation of fresh blood the day after it was prepared; × 1000 diameters. *b*. White corpuscle containing rod-shaped blocks of pigment from blood preserved in Pacini's fluid, kindly sent me by Surgeon-Major Sharpe from Sierra Leone. The patient was said to be suffering from ague, and when the blood was taken his temperature was 105° F. No parasites were found in the red corpuscles, but there was an unusual number of white corpuscles heavily laden with pigment. (Not a camera lucida drawing, but magnifying power probably about 1000 diameters.) *c*. Phagocyte white corpuscle from dried preparation of blood from a case of chronic irregular fever. There were crescents in the fresh blood. The dark outline on the left, which did not take on the eosin colour so deeply as the rest of the corpuscle, contained minute spheres of pigment, and seemed to be formed by extremely minute powdery pigment, the particles of which were too small to draw, and is suggestive of a parasite, probably a crescent, enclosed in the corpuscle; eosin and methylene blue; × 1000 diameters. *d*. A white corpuscle containing pigment spheres in a bloodvessel in a malarial spleen. For the section from which it is taken I am indebted to Surgeon-Captain Duggan, who prepared it in the British Institute of Preventive Medicine; × 1000 diameters.

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SOME CONSIDERATIONS ON THE CHLOROFORM QUESTION, SUGGESTED BY THE REPORTS OF THE HYDERABAD AND "THE LANCET" COMMISSIONS.

BY T. LAUDER BRUNTON, M.D., F.R.S.

[THE following paper was begun at the request of the Editors of THE LANCET, and was originally intended to be published as an introductory article to a reprint of the Report of THE LANCET Commission appointed to investigate the Subject of the Administration of Chloroform and other Anæsthetics from a Clinical Standpoint, published in THE LANCET of March 18th and 25th, April 1st, 15th, and 22nd, May 6th and 20th, and June 17th, 1893. In spite of considerable curtailment, Dr. Lauder Brunton finds that it has now grown much too long to serve the purpose for which it was originally intended, and the further shortening required to adapt it for this purpose might, he thinks, prevent neuroparalysis as a cause of death during anæsthesia being presented with sufficient clearness to the medical public. The Editors of THE LANCET gladly avail themselves of the opportunity of publishing Dr. Lauder Brunton's views with regard to this most important question before the issue of the reprint.]

THE POSITION OF THE QUESTION.

Amid the burning questions bearing on the advancement of medical science during the last decade, so fruitful of progress in every department of the medical art, perhaps none has been the subject of so much elaborate discussion and research as the action of anæsthetics in general and of chloroform in particular. But the views held by investigators regarding the action of chloroform on the human organism are not harmonious, and in many cases present complete divergence on some most important points.

In any disputed question, if diametrically opposite views are held by large numbers of intelligent, honest, and well-informed people, we may consider that there is almost certainly some truth on both sides, but that neither side has apprehended the whole truth. In regard to anæsthetics, there is little or no dispute regarding the immense advantages which are conferred on mankind by their use. They not only lessen the pain of operations and remove the dread of them, which would otherwise keep the patient from having them performed until too late, but they also allow of time and care being bestowed upon operative procedures which could not otherwise be given, and they thus ensure an amount of success which would otherwise be impossible. But the dread of pain has of late years been replaced by a dread of the anæsthetic which would relieve it, and many people will now suffer the short, but extremely severe, pain caused by the extraction of a tooth rather than run the trivial risk of using an anæsthetic.

So long as we are ignorant of the exact causes of death during anæsthesia this dread must remain. It can only be removed by such a knowledge of the conditions which endanger a patient's life during the administration of an anæsthetic as will enable us to ensure the complete absence of risk in any individual case. For this we require a detailed consideration of the factors which produce death, and the question to be settled is, whether death during anæsthesia is due to (*a*) the operation itself, (*b*) the anæsthetic *per se*, (*c*) the mode of administration, (*d*) the condition of the patient, or a combination of two or more of these factors.

METHODS OF RESEARCH, EXPERIMENTAL AND CLINICAL.

In order to ascertain the exact dangers of anæsthetics and the best methods of averting them, many experimental researches have been made, and an immense amount of clinical evidence has been accumulated. The most extensive of all the researches hitherto made is undoubtedly that of the Hyderabad Chloroform Commission, appointed by His Highness the Nizam at the suggestion of Surgeon-Lieutenant-Colonel Lawrie, and the most important collection of clinical records is that of THE LANCET. There can be no doubt whatever that it is only through the combined study of clinical observation and experimental research that the truth can be obtained.

ADVANTAGES OF EACH METHOD.

Experimental Method.

It is quite clear that in spite of the millions of times that anæsthetics have been given to patients we are yet far from having attained this knowledge. The lives of human beings are too valuable to allow of any experiment being tried on them which will endanger them in the very least. We are thus prevented from testing on them the action of various alterations in the nature of the anæsthetic, the mode of applying it, the condition of the nervous system, the position of the body, the freedom or obstruction of the respiration, the effect of shock, and other factors which may tend to bring about a fatal result. It is here that experiments in the laboratory come in usefully, for, the lives of the lower animals being of little value as compared with those of men, we can without fear give anæsthetics under various conditions so as to ascertain the effect of each. Every medical man is obliged by his office to do the best he possibly can for every patient under his care, and although the imperfection of our knowledge may oblige him to administer anæsthetics without his being certain that no bad result will follow, yet he cannot try them on patients simply with a view to increase our general knowledge of their action; he can only do it for the purpose of doing the utmost good he can to the individual patient. The death of one of the lower animals from an anæsthetic is simply to it a painless and pleasant way of ending life, and it is the method chosen by humane people of saving their four-footed favourites from the weariness, discomfort, or pain which would attend a natural death either from disease or old age. But the death of a human being from an anæsthetic, though painless to the individual, may deprive a family of a father's support or a mother's guidance, wreck the lives of the survivors, and cause misery incalculable. In order to prevent such a catastrophe it is the bounden duty of those who have the necessary opportunity and training to make experiments on animals, and thus, in the words of His Highness the Nizam, when he explained the objects of the Hyderabad Commission to his staff, "to save men's lives." The number of experiments with anæsthetics on animals is perfectly insignificant in comparison with the number of times they have been tried on man, yet their value is comparatively great, not only because they are to be ranked with the fatal, rather than with the ordinary, cases in man, but also because the conditions under which death occurred have been voluntarily produced and carefully noted.

Clinical Method.

The number of cases observed by the bedside is immensely greater than that of experiments in the laboratory, and we must remember that every time an anæsthetic is administered to a patient the imperfection of our present knowledge compels us, much against our will, to make, to a certain extent, an experiment upon that patient. We try the anæsthetic; we hope that it will suit, and we do so with fair grounds, knowing that in the great majority of cases no bad result will ensue. But at present we are not absolutely certain, for occasionally and most unexpectedly untoward results follow, and patients die during the administration of an anæsthetic, even though they may have taken it before, and that repeatedly, without any misadventure. The knowledge that we require is such as will enable us to predict before the administration, either (*a*) that all anæsthetics will suit, or (*b*) that all anæsthetics must be abandoned, or (*c*) that a particular anæsthetic will be harmless in that particular case, while another might be dangerous or fatal, so that in every case we shall know with certainty what course to pursue, and thus prevent deaths from anæsthetics ever occurring.

"THE LANCET" INQUIRY.

There can be no doubt whatever that it is only through the combined use of clinical observation and experimental research that this desideratum can be supplied. It was with a view of rescuing from forgetfulness and of collating in a form available for purposes of study the clinical records which have been made up on this subject by a host of observers, that the Editors of THE LANCET undertook a commission of inquiry into this great subject the publication of which in separate form will represent the most complete collection of records on the subject of anæsthetics. In the introduction to the report of this Commission it is stated that the inquiry was meant to supplement the labours of the Hyderabad Chloroform Commission as far as possible. The investigation began by collecting statistics from the great hospitals

throughout the world. The newspaper accounts of misadventures were also sifted and every effort made to render the accounts accurate. Dr. Snow's records were also utilised, and those of the Registrar-General from which additional information was obtained. From all these sources light was sought. Yet up to the present neither clinical observations nor laboratory experiments have given such convincing proof of the action of anæsthetics that unanimity of opinion prevails on the subject. On the contrary, complete divergence of opinion exists in regard to some of the most important points. All that can at present be done, then, is to sum up as far as possible what we do know, and to point out as far as we can the direction in which work is still required.

CLASSIFICATION OF DEATHS.

One reason of our failure to understand clearly why deaths occur during anæsthesia is that we do not sufficiently know the causes of sudden death, apart from anæsthetics altogether. We sometimes see a man suffering from heart disease, and especially from fatty heart or aortic regurgitation, suddenly fall down dead. We are contented to say that it is failure of the heart, but we do not know the exact mechanism, nor do we know at all fully the mode in which death occurs from what we term "shock." Death from shock was a frequent occurrence before the introduction of anæsthetics, and we are sometimes apt to forget that death from shock may still occur although anæsthetics have been administered. Deaths under anæsthetics may be divided into (1) deaths *from* the anæsthetic; (2) deaths *during* the anæsthesia but not due to the anæsthetic and caused by shock from the operation, failure of a fatty heart, or any other cause which might have led to the patient's death even if no anæsthetic had been given; (3) deaths *during* anæsthesia, and due to the combined action of the anæsthetic and of the operation or some other cause. It is useless for any individual or committee to pronounce *ex cathedrâ* that any particular death belongs to the first, second, or third of these three classes. Each member of the medical profession will form his own judgment, and it is with the view of enabling him to form his judgment correctly that, in this paper, certain physiological and pathological data are included which cannot be readily obtained without easy access to a large library.

CARBONIC ACID AND ALCOHOL AS TYPICAL ANÆSTHETICS.

The most universal anæsthetic is carbonic acid. Very few people are anæsthetised and rendered insensible by the actual inhalation of carbonic acid in the shape of charcoal fumes,[1] of the gas in brewers' vats and old wells, or of the choke damp in coal mines. But its action as an anæsthetic when generated within the body and imperfectly excreted is almost universal. Very rarely indeed does it happen that the brain retains consciousness to the last, and the insensibility which precedes death is chiefly due to the anæsthetic action on the brain of carbonic acid accumulating in the blood from failure of the respiration. The oldest anæsthetic deliberately administered is alcohol, and in Solomon's description, the drunkard gives the anæsthetic action of strong drink as a reason for drinking again. "They have beaten me," he says, "and I felt it not. I will take it yet again." Alcohol is also the most convenient drug for studying the stages of anæsthesia, inasmuch as they are slowly produced, and each stage is sufficiently prolonged, to allow of its being carefully observed, while the usual stages of anæsthesia produced by ether and chloroform are much shorter and not so distinctly marked off from one another. The effects of anæsthetics are all, however, very much alike in character, with the exception that the stages differ in intensity and duration according to the anæsthetic employed. Thus the stimulant effect of laughing-gas is well marked, while it is hardly perceptible in the case of carbonic acid. The first symptoms produced by an anæsthetic, whether it be nitrous oxide, alcohol, ether, or chloroform, usually are increased circulation, dilatation of the blood-vessels, and a more rapid pulse. These are naturally accompanied by a glow over the surface and a feeling of general stimulation. Succeeding these is a stage of impaired action of the cerebral centres, usually accompanied by lessened sensibility to external impressions, which may be termed the "narcotic action." Then comes the anæsthetic action, when the individual becomes insensible to external impressions, painful or otherwise, but the respiration keeps steady and the pulse is regular and strong. Even with alcohol, however, a further stage may be reached, when the respiration will cease and the pulse also, as in cases where enormous quantities of liquor have been drunk for a wager.

[1] In charcoal fumes there is a large proportion of carbonic oxide as well as carbonic acid.

STAGES OF ANÆSTHESIA.

The action of anæsthetics may thus be divided into four stages:—

(1) The stimulant stage.
(2) The narcotic stage.
(3) The anæsthetic stage.
(4) The paralytic stage.

In the case of alcohol the stage of stimulation is much prolonged, and is capable of many subdivisions. The later part of this stage is sometimes indicated in popular language as "jolly drunk," the narcotic stage as "stupid drunk," while the term "dead drunk" is applied to the anæsthetic stage.

DEATH "FROM" AND "DURING" ALCOHOLIC INTOXICATION.

Usually recovery takes place, even from the "dead drunk" stage, though it does not always do so, and the condition may pass into the paralytic stage and death occur. The death in such a case is due to the action of the alcohol, pure and simple. It is death *from* the administration of alcohol. But in the earlier stages of intoxication death may be caused by the man falling over a precipice which he would have avoided had he been sober, or he may fall on his face in the road and be drowned in a puddle two inches deep when too drunk to know what has happened. In such cases death is no doubt due to alcohol, yet it is not caused by the action of alcohol pure and simple. It is death *during* intoxication rather than death *from* intoxication. The proximate cause of death is not the action on the nerve centres or heart of the alcohol which has been absorbed, but that of *shock* from falling in the former and that of *suffocation* by drowning in the latter case.

DEATHS "FROM" AND "DURING" ANÆSTHESIA.

What is true of alcohol is true also of other anæsthetics, and the death of patients during anæsthesia produced by chloroform or ether may be no more due to the action of the anæsthetic than the deaths of the men who were smashed or drowned in the cases just mentioned were due to alcohol. They may die from the shock of an operation, from emotion, from failure of a fatty heart, from hæmorrhage, or from suffocation. The suffocation may be caused by spasm of the glottis, plugging of the windpipe or bronchi, obstruction of the nose and mouth by position, or by pressure on the thorax or abdomen. In all such cases, death, though occurring *during* anæsthesia, ought not to be said to be *from* the anæsthetic.[2] If a murderer throttles a man who has been rendered insensible by the action of a narcotic or anæsthetic, it is absurd to ascribe the death to the anæsthetic, and the same would be true if, instead of compressing the windpipe, he choked his victim by making him breathe a strongly irritant vapour such as strong ammonia or chlorine. Nor would the case be altered if, instead of chlorine, he used chloroform containing free chlorine or other irritating substances or if he used the vapour of chloroform itself in such concentration as to prove a local irritant to the air passages. In such a case it is not the anæsthetic which is to be blamed but the mode of administration. Every now and again cases occur in which the whole blame for the patient's death is laid upon the anæsthetic because the patient died after two or three whiffs of chloroform, and before the operation had ever been begun. Instances of this may be found in Case 267. "The patient got a whiff or two of chloroform and was dead." In Case 415 the patient "had hardly taken two whiffs when the respiration ceased, and he was dead." In 420, in an operation for cancer of the tongue, the patient died before the operation was commenced. Yet such occurrences may simply be due to death from fright, from suffocation by spasm of the glottis, or still more likely to neuroparalysis, a condition which we shall presently discuss. There are cases on record where a man has died simply from a touch when he was expecting to be killed. The touch was not capable of doing him any harm, but it was the mental condition which affected him and not the touch upon his skin.

USE OF ANÆSTHETICS IN LESSENING SHOCK.

During partial anæsthesia by alcohol shock is frequently lessened to a considerable extent, and drunken men

[2] Whenever reference is made to the cases of death recorded by THE LANCET Commission, it must be remembered that the cause of death entered in the report is the one assigned by the original reporter and not by THE LANCET Commission.

will sustain falls or other injuries without any trace of the shock which would have been expected to occur had the accident happened to one who was perfectly sober. At the same time, an intoxicated man may be killed by the shock of a fall when thrown from his horse with sufficient violence, notwithstanding the lessened susceptibility to shock which the alcohol has produced. What happens in alcohol happens also in the case of other anæsthetics. How interesting a light would be cast upon the causes of deaths under chloroform if an approximation of the numbers of sudden deaths during operation previous to the introduction of chloroform could in any way be ascertained. Many deaths used to occur then. Deaths still occur during imperfect anæsthesia, and it is possible that deaths may occur from shock, even during profound anæsthesia. A consideration of the table on page 635 of the report is most instructive in this connexion as showing the nature of the operation as a factor in determining death. The table records in all 83 deaths as having taken place during the reduction of some dislocation. For extraction of teeth 53 deaths are recorded; for amputation of finger, 21; for fistula in ano, 20; for avulsion of the toe-nail, 13; for opening abscesses, 14; for catheterisation, 8; and extracting thorns, 3. On the other hand, in any of the large operations, such as amputation of the thigh, 6 deaths only are noted out of the many thousands of cases dealt with. Although a certain amount of fallacy, due to the larger number of trivial cases, may affect these statistics, yet such facts as these not only point to shock as being a more important factor in death during anæsthesia than the anæsthetic itself, but also to the diminution of shock by other anæsthetics in the same way as by alcohol. But it may be said that shock will not explain the occurrence of death during the administration of the anæsthetic, when the operation has not yet been commenced, and the number of these is large, no less than 40 being mentioned in the report. Yet this objection, apparently well founded, is fallacious, because shock or neuroparalysis may arise from emotion or from interference with respiration as well as from operation or accident. In order to understand the causes of death during anæsthesia it will be advisable to consider shortly the modes of death in general.

MODES OF DEATH.

The heart, lungs, and brain have been termed by Bichat the tripod of life, but, as Huxley has very truly observed, the essentials are the heart and lungs. The cerebro-spinal nervous centres are only essential in so far as they maintain the respiratory movements and thus enable the lungs to aerate the blood. The two supports of life thus are the heart and lungs, and death may begin by failure of either. Death beginning at the lungs is usually termed asphyxia, and death beginningat the heart is called shock or syncope.

SYMPTOMS OF DEATH BEGINNING AT THE LUNGS (ASPHYXIA).

The course of death beginning at the lungs is well seen in puppies or kittens drowned in shallow water or suffocated by occlusion of the air passages in other ways. The supply of air to the lungs being cut off the blood gradually becomes more and more venous. The venous blood acts first as a stimulant and then as a paralysant to all the nerve centres, the respiratory, the vaso-motor, the cardio-inhibitory, and the cardio-accelerating. In consequence of this the respiratory efforts are first increased, then the accessory muscles of respiration are called into play, and finally convulsions of the whole body set in. As the nerve centres become paralysed all movements cease, the animal becomes motionless and to all appearance dead; but if the heart be examined it will be found to be still beating. The blood, however, becomes more and more venous. The venous blood acts as a poison to the heart so that its pulsations become gradually slower and feebler, and cease altogether about five minutes after the stoppage of respiration. In this case both heart and lungs are healthy, and if artificial respiration be begun before the heart is too thoroughly poisoned by the venous blood to render its recovery impossible, the blood will be aerated, the heart will continue to beat, the other organs of the body will regain their vitality, and the animal will recover health.

SYMPTOMS OF DEATH BEGINNING AT THE HEART.

When the heart suddenly ceases to beat the circulation is still maintained for about a minute by the elastic pressure of the aorta and arteries. After this time the blood stagnates, and, becoming venous, acts as an irritant to the nerve centres. The effect of this varies according to the condition of these centres. If they are healthy and not already dulled by narcosis through drugs or imperfectly aerated blood previously circulating in them, gasping respiration, with possibly convulsions, may occur, just as in death from the lungs; but if the heart be examined it will be found to be no longer beating. If the nerve centres be dull the respiration will simply stop shortly after the heart, and artificial respiration will not have the same power of resuscitation that it has in death from the lungs.

MECHANISM OF THE HEART.

In order to understand why the heart should suddenly stand still we must consider the mechanism by which pulsations are maintained. It is now generally acknowledged that the muscular fibres both of the heart and bloodvessels have the power of contracting rhythmically independently of nerves; but their contractions are coördinated by nervous arrangements which are partly contained in the heart and vessels themselves, and partly in the central nervous system, and more especially the medulla oblongata. These mechanisms[3] are so complicated that it is impossible, on account of want of space, to discuss them here in detail. Speaking very generally, however, we note that in the heart itself there is one mechanism which causes it to beat more quickly and to contract more strongly, or even to stand still completely in systole. Another mechanism has the opposite action, and causes the heart to beat more slowly, to contract less strongly, to dilate more completely, and even to stand still in complete diastole. Usually these mechanisms act alternately, so that each systole is followed by a diastole and *vice versâ*. It would appear, however, that this arrangement may be disturbed, so that they act together, and then the heart is like the wheel of a steam-engine at the dead point, when no amount of force will make it move. Usually the stimulating mechanism in the heart itself is more powerful than the inhibitory, and irritation of the heart, either mechanical or electrical, will cause it to contract; but during every cardiac cycle there is a time—the "refractory" period of Marey—when irritation of the heart instead of causing contraction, tends to prevent it and prolong the diastole. This refractory period is usually short, but Kronecker and Schmey have found that irritation of a certain point in the septum ventriculorum appears to disturb the coördination of the contracting and dilating mechanisms permanently, so that the heart stands still and cannot be induced to contract by stimulation. Both of these mechanisms are connected with the brain, in which there are inhibitory and stimulating centres, the inhibitory sending impulses to the heart chiefly through the vagus, and the stimulating chiefly through the sympathetic. In the brain, however, the relative strength of the two centres is the reverse of that in the heart, the inhibitory being the stronger of the two, so that cerebral irritation tends to make itself evident by slower pulsation of the heart or stoppage in diastole. The arteries likewise have in themselves a contracting and dilating mechanism, but these also are under the control of the central nervous system.

MECHANISM OF RESPIRATION.

It should not be forgotten that a similar mechanism for respiration exists in the medulla oblongata, consisting of expiratory and inspiratory centres which act alternately under ordinary circumstances, but which may be altered in their relations to one another by poisons or injury, so that respiration ceases entirely.

STIMULATION OF CARDIAC AND RESPIRATORY MECHANISMS.

All the mechanisms in the heart, vessels, and nerve centres, may be first stimulated and then paralysed by venous blood or reflexly by sensory irritations. But the result of stimulation will differ according to (*a*) the strength of the stimulus and (*b*) the condition of each centre. The effects of a strong and weak stimulus are different. Thus a moderate mechanical irritant such as the stroke of a switch acts as a powerful stimulant while a severe blow from a heavy club acts as a paralysant. The inhalation of the dilute ammonical vapour from smelling salts is a powerful stimulant but sudden inhalation of strong ammonia will cause choking and might cause death by neuroparalysis.

[3] The word mechanism has been purposely chosen on account of its indefiniteness as it allows us to include under it various arrangements of muscle, nerve endings, nerve fibres, and nerve cells, without attempting to assign to each the part which it plays in the function performed by the whole.

Just as the effects of stimuli on a nerve centre in a certain condition differ according to the strength of the stimulus so the effects resulting from the same stimulus may be of an opposite nature, according as one set of mechanisms or another preponderates.

MODIFICATION BY ANÆSTHETICS OF THE EFFECTS OF STIMULATION.

These mechanisms are not all affected with the same rapidity by anæsthetics, although they are all rendered inactive if the anæsthetics are pushed sufficiently far. Thus it happens that a different result may occur from a sensory stimulus during partial anæsthesia from what occurs either when no anæsthetic has been given or during complete anæsthesia. Thus a powerful irritation of a sensory nerve when no anæsthetic has been given stimulates reflexly both the vagus and vaso-motor centres. The heart is thus slowed, but the fall of blood pressure which this would produce is counteracted, or more than counteracted, by the simultaneous contraction of the arterioles due to stimulation of the vaso-motor centre. The blood pressure may thus remain constant, or even rise instead of falling. When anæsthesia is complete, sensory stimulation has no effect on either centre, and consequently produces no change in the blood pressure. But during imperfect anæsthesia by chloroform Bowditch and Minot have found that the vaso-motor is sooner rendered inactive than the vagus centre, so that a sensory stimulus will tend to stop the heart without contracting the vessels, and will thus lead to a great fall of blood pressure. This unequal failure of nervous mechanisms during anæsthesia they regard, and probably rightly, as one great source of danger when operations are performed in a state of imperfect instead of in complete anæsthesia.

DEATH BEGINNING AT THE BRAIN.[4]

Although death really begins either at the lungs or heart, yet the brain affects both, and we may thus have death from the brain occurring in three ways—(1) through the lungs (coma), with the symptoms of asphyxia; (2) through the heart and vessels (syncope or shock); and (3) through lungs and heart simultaneously (neuroparalysis or shock). When heart and respiration are both affected, they may not be so in the same degree, and thus we may have different varieties of shock, such as the extreme depression, with more or less mental clearness, which occurs after some severe injuries, and the sudden extinction of all the vital processes which occurs after others.

1. Death beginning at the brain is generally a form of death from asphyxia, even when the cerebral injury is sudden or violent, as from a bullet wound. The course of events is nearly the same as that already described under death beginning at the lungs.[5] Death is rapid, if the injury be very severe—e.g., a bullet wound in the brain or a very severe blow on the head; convulsions may occur just as they do in drowning or suffocation. But if the death is slower, as in cases of ordinary apoplexy or of coma from disease or drugs, the gradual accumulation of carbonic acid in the blood acts like an anæsthetic, the cerebral motor centres become paralysed before the respiratory centres cease to act, and thus convulsions do not occur. This is also the case when the motor nerves are paralysed by poisons such as curare, so that the respiratory muscles can no longer obey the stimuli sent to them from the nerve centres. In such cases the timely use of artificial respiration may have most satisfactory results. In poisoning by curare I have by long continued artificial respiration restored an animal to health after it had been apparently dead for four hours, and Schiff has had similar results in animals where respiration had been arrested by slight lesions of the medulla oblongata.

2. The symptoms of the second form have been described under death beginning from the heart.

3. In the third class of cases not only respiration and circulation, but all the functions of the nervous system fail together, the breathing stops, the pulse stops, and the person dies instantaneously and quite quietly without convulsions. This form of death occurs "*far more frequently* than is generally supposed" in cases of hanging, throttling, and strangling.[6] It was certainly new to me to learn, as I did when reading up this subject in one of the best text-books in existence,[7] that nearly one-half of those who die from falling into water are *not drowned*, but are killed by shock, or neuroparalysis, as Casper terms it. A number of the people who died during the destruction of Pompeii died from suffocation, as is evident from the convulsions apparent in the contorted forms which the casts of their bodies present. Some, however, died from shock, and their bodies have remained flaccid and limp.

POST-MORTEM APPEARANCES.

In death by asphyxia, whether it has begun at the brain or lungs, the lungs are found congested; the right side of the heart, pulmonary artery, and great veins are distended with dark fluid blood, and the left side of the heart is empty or nearly so. Capillary ecchymoses occur in the lungs, and there is marked injection of the larynx and trachea. The usual idea that in suffocation the face is bluish-red and swollen, with protruding eyes, is incorrect. Most frequently the countenance after *every kind* of suffocation, and not only where death has occurred from neuroparalysis, differs in no respect from what is observed after other kinds of death.[8] To recapitulate shortly, the appearances observed after death from *asphyxia* are on a large scale precisely the same as those which are seen on a small scale whenever any vessel is obstructed—e.g., by a ligature while the circulation is going on—viz., accumulation of blood on the proximal and diminution of blood on the distal side of the obstruction. In asphyxia the stoppage of the circulation occurs in the minute vessels of the lungs themselves. The right side of the heart and all the vessels connected with it are gorged with blood, while the left side and arteries are empty.

Death from *neuroparalysis* or *shock* "leaves no trace discoverable by the anatomist's knife."[9] The appearances are of a "perfectly negative character," and "not one single organ in the whole body displays any unusual alteration."[10] The lungs are not hyperæmic, and the right side of the heart is not engorged, but both sides are either empty or contain only a small quantity of blood.

What has now been said may possibly enable the readers of THE LANCET report of clinical cases to form their own opinions regarding the mode of death in such cases as are sufficiently reported to classify them according to their causes, and to decide whether they are due to the anæsthetic or the operation, or both.

(To be continued.)

[4] The word "brain" is here used for the sake of brevity and is intended to cover the whole cerebro-spinal and sympathetic system, as the part played by each division of the nervous system cannot be discussed here.

[5] Horsley.

[6] Casper's Handbook of Forensic Medicine, Sydenham Society edition, vol. ii., p. 160. The italics are Casper's.

[7] Casper, op. cit., p. 231.

[8] Casper, op. cit.

[9] Casper, op. cit., vol. ii., p. 123.

[10] Op. cit., p. 183.

AN INQUIRY INTO THE RELATIVE ADVANTAGES OF VAGINAL HYSTERECTOMY AND THE SUPRA-VAGINAL AMPUTATION OF THE CERVIX IN CANCER OF THE CERVIX UTERI,

BASED ON AN OBSERVATION OF FORTY-THREE CASES TREATED BY ONE OR THE OTHER OF THESE TWO OPERATIONS.

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NEARLY two years and a half ago I read a paper before the Royal Medical and Chirurgical Society, in which I recorded my results in nineteen cases of the supra-vaginal amputation of the cervix for cancer of the cervix. Since then I have performed this operation in seven additional cases, making a total of twenty-six operations of this kind. I have also up to the present time (June 3rd, 1895) performed vaginal hysterectomy for cancer of the uterus in twenty-three cases. Six of these were cases of primary cancer of the body of the uterus, and they formed the subject of the paper which I read before the Obstetrical Society of London in December last.[1] In the remaining seventeen cases vaginal hysterectomy was performed for cancer of the cervix. These two series of cases afford material for an inquiry as to the relative advantages of the two operations—the supra-vaginal

[1] THE LANCET, Dec. 15th, 1894.

TABLE I.—*Twenty-six Cases of Supra vaginal Amputation of the Cervix for Cancer without a Death.*

No.	Date of operation.	Age.	Complete or incomplete.	Stage of disease.	Recurrence.
1	July 27th, 1886	29	Complete	Moderately advanced	Remained well for six months; then recurrence in pelvis.
2	Aug. 6th, 1885	43	Incomplete	Considerably advanced	——
3	Feb. 12th, 1886	41	Complete	Early	Quite well Jan. 24th, 1888; not seen or heard of since.
4	July 20th, 1886	33	Complete	Considerably advanced (deep conical ulcer)	Remained well and free from recurrence nearly twelve months; then recurrence in pelvis at some distance from the stump.
5	Jan. 7th, 1887	39	Incomplete	Moderately advanced	——
6	March 17th, 1887	42	Complete	Early	Still remains well (May, 1895), more than eight years since the operation. Patient sent to me by Dr. Dundas Grant. Specimen has been shown at the Obstetrical Society and at the Royal Medical and Chirurgical Society.
7	April 5th, 1887	51	Complete	Moderately advanced	Well for six months, then recurrence in stump.
8	Sept. 15th, 1887	52	Complete	Moderately advanced	Remained well nine months, then recurrence in stump.
9	Dec. 6th, 1887	65	Complete	A large, soft, brittle growth protruding through os uteri, and attached a little way up cervical canal, bleeding readily when touched	Remained well more than two years; recurrence took place about six months later.
10	Jan. 16th, 1888	39	Complete; was four months pregnant on admission; abortion induced; supra-vaginal amputation done eighteen days later	Large "cauliflower" growth, chiefly affecting posterior lip	Came up to the hospital soon after the operation; not examined on that occasion; was not seen afterwards. I heard she died in a fainting fit some months later.
11	April 17th, 1888	30	Apparently complete; a previous operation had been done before by another practitioner	Apparently early	Recurrence took place in about six months.
12	May 31st, 1888	42	Complete	Moderately advanced; soft "cauliflower" growth over area, size of half-a-crown, on posterior lip of cervix	Still remains quite well (May, 1895), seven years since the operation. Patient sent to me by Mr. Cursham Corner. Specimen has been shown at the Obstetrical Society and also at the Royal Medical and Chirurgical Society.
13	Sept. 22nd, 1888	32	Apparently complete; the operation was done nine weeks after a confinement at term; symptoms had been present during pregnancy	Considerably advanced; large mushroom-shaped growth, chiefly involving anterior lip	Recurrence in stump in three months.
14	March 28th, 1889	37	Complete	Advanced	Well three months after operation; not seen since.
15	May 2nd, 1889	31	Complete	Moderately advanced; soft growth chiefly affecting posterior lip	Not seen since she left the hospital.
16	August 29th, 1889	40	Complete; was three months pregnant at time of operation; miscarried two days after it; Douglas's pouch slightly opened; cervix cut off with the cautery	Moderately large "cauliflower," chiefly affecting posterior lip	Still remains quite well (May, 1895), more than five years since the operation. She has attended regularly at the London Hospital about once a month since the operation. Specimen has been shown at the Obstetrical Society and at the Royal Medical and Chirurgical Society.
17	Feb. 18th, 1890	53	Complete	Moderately advanced "cauliflower" growth, size of half a walnut, springing from right side of cervix just within os uteri	Still remains well, more than five years since operation. She was sent to me by Dr. Godson. I last saw her on June 1st, 1895. Specimen has been shown at the Royal Medical and Chirurgical Society.
18	May 7th, 1891	38	Complete	Moderately advanced; anterior vaginal wall slightly infiltrated; naked eye appearance that of cancerous growth; microscopically only a glandular structure seen	Was well for more than a year; then symptoms of recurrence, and the last time I saw her there was a large, evidently malignant, ulcer at the top of the vagina. It is interesting to observe that the microscopical characters of the growth in this case were not such as to make it clear that the case was one of cancer. The recurrence, however, placed the nature of the case beyond doubt.
19	Feb. 18th, 1892	—	Incomplete	Advanced	——
20	Jan. 29th, 1893	37	Complete	"Cauliflower"; moderately advanced	Still remains well (June, 1895), more than two years since the operation. Patient sent to me by Mr. Garry Simpson of Acton.
21	Feb. 8th, 1893	60	Complete	Am doubtful as to malignancy, though clinically the symptoms and signs were suggestive of cancer	No sign of recurrence.
22	March 22nd, 1893	47	Complete	Moderately advanced	Still remains well (June, 1895), more than two years since operation. This patient was sent to me by Dr. Godson.
23	Jan. 18th, 1894	32	Complete	Large conical ulcer	Still remained well (May, 1895) when I examined her at the London Hospital.
24	Feb. 6th, 1894	—	Complete	Am doubtful as to malignancy, though clinical appearances suggestive of cancer	——

TABLE I.—*Twenty-six cases of Supra-vaginal Amputation of the Cervix for Cancer without a Death*—(continued).

No.	Date of operation.	Age.	Complete or incomplete.	Stage of disease.	Recurrence.
25	Feb. 20th, 1894	—	Incomplete; the uterus was much enlarged, apparently by fibroids; when the cervix was cut off at level of internal os it was evident that there was some malignant growth above the line of section. The patient refused to have the remainder of the uterus removed by a combined operation; the body of the uterus was too large to have removed per vaginam.	Moderately advanced	—
26	Jan. 10th, 1895	46	Complete	Conical ulcer	Remains well at present. The patient was sent to me by Mr. Vernon of Poplar.

TABLE II.—*Twenty-three cases of Vaginal Hysterectomy for Cancer, with three Deaths.*

No.	Date of operation.	Place.	Part affected.	Complete or incomplete.	Immediate result.	Subsequent history.
1	March 1st, 1886	London Hospital	Primary cancer of the body	Complete	Recovered	Well for nearly a year, then recurrence.†
2	—	London Hospital	Cancer of cervix	Complete	Died.*	—
3	Nov. 7th, 1889	London Hospital	Primary cancer of the body	Complete	Recovered	Known to be well Oct., 1893, about four years after the operation; not seen since. For full record see THE LANCET.‡
4	Oct. 23rd, 1890	London Hospital	Cancer of cervix	Complete	Recovered	Still remains well (May, 1895), four years and a half since the operation; I see her regularly at the London Hospital.
5	March 17th, 1892	London Hospital	Primary cancer of body	Complete	Recovered	Remained well for more than two years and a half; early this year (1895), and before it was three complete years since the operation, she came to the hospital with undoubted recurrence.
6	June 16th, 1892	Private (with Mr. Russell of Forest-gate)	Cancer of cervix	Complete	Recovered	Remained well more than two years after the operation; recurrence, however, took place early in the third year—i.e., about August, 1894.
7	Feb. 1st, 1893	Private (with Mr. Stott of Highgate)	Primary cancer of body	Complete	Recovered	Remains well (May, 1895).
8	June 8th, 1893	London Hospital	Primary cancer of body	Complete	Recovered	Remained well (May, 1895) when she came up to the London Hospital and I examined her. Patient sent to me by Mr. Best of Dover.
9	July 20th, 1893	London Hospital	Cancer of cervix; large "cauliflower"-like growth of posterior lip	Complete	Recovered	Remained well for a little more than a year; then recurrence.
10	Aug. 4th, 1893	London Hospital	Cancer of cervix; large "cauliflower" growth of posterior lip	Complete	Recovered	Recurrence took place in less than a year, and the patient died on Feb. 23rd, 1895.
11	Aug. 21st, 1893	London Hospital	Primary cancer of body	Complete	Recovered	Quite well Oct. 11th, 1894; not seen or heard of since.
12	Aug. 28th, 1893	London Hospital	Cancer of cervix	Incomplete; the perimetric tissue evidently partly involved	Recovered	Sent to me by Dr. W. Duncan when Middlesex Hospital was closed.
13	Feb. 1st, 1894	Private	Cancer of cervix	Complete	Died	—
14	Feb. 22nd, 1894	London Hospital	Cancer of cervix; large "cauliflower"	Apparently complete	Recovered	Recurrence took place in August, 1894.
15	Feb. 27th, 1894	Private (with Mr. Howse and Dr. Williams of Barking)	Cancer of cervix; "mushroom"-shaped growth	Complete	Recovered	Remains well at present (May, 1895).
16	Aug. 13th, 1894	Private	Cancer of cervix; large "cauliflower" with a nodule in left broad ligament	Seemed complete	Recovered	Symptoms of recurrence within a few weeks of patient's return home.
17	Aug. 16th, 1894	London Hospital	Cancer of cervix	Incomplete	Recovered	—
18	Aug. 30th, 1894	London Hospital	Cancer of cervix; large "cauliflower"	Complete	Died	—
19	Oct. 18th, 1894	London Hospital	Cancer of cervix; ulcerative type	Complete	Recovered	Well at present (May, 1895). Sent to me by Mr. Howse of Barking.
20	Dec. 6th, 1894	London Hospital	Cancer of cervix	Incomplete	Recovered	—
21	Feb. 14th, 1895	London Hospital	Cancer of cervix	Complete	Recovered	Well at present (May, 1895). Sent to me by Mr. Cory of Bournemouth.
22	April 25th, 1895	London Hospital	Cancer of cervix; large "cauliflower"	Doubtful	Recovered	—
23	June 1st, 1895	Private (at Fitzroy House). Sent to me by Mr. Garry Simpson of Acton	Cancer of cervix; growth entirely in canal. Body of uterus greatly distended, containing about half a pint of fœtid pus	Complete	Recovered	—

* Died on the second day with gradual heart failure and œdema of lungs; no local complication

† Transactions of the Obstetrical Society, vol. xxx., p. 218.

‡ THE LANCET, June 10th, 1893.

amputation of the cervix on the one hand and vaginal hysterectomy on the other—in cases of cancer of the cervix. If I were only able to bring forward a series of cases of one of these operations, it might appear as if I were, to some extent at least, prejudiced in favour of the operation performed in the series I was bringing forward. As, however, I bring forward a series of each of these operations, I think I may fairly claim that I approach an inquiry into their relative merits without any bias. As is well known, there has been a considerable difference of opinion as to which operation should be the recognised routine treatment for cases that are not too far advanced for operation. There is undoubtedly at the present time, so far as a mere enumeration of names is concerned, a majority in favour of treating all such cases by total extirpation. If we consider what are the chief points for comparison in operations for cancer of the cervix we find the principal ones to be three: (1) the mortality of the operation; (2) the amount of mutilation involved; and (3) the length of time for which the patients operated on remain free from recurrence.

1. *Mortality.*—In bringing forward data on this point it seems to be the fairest way to mention *all* the cases in which a radical operation has been performed for cancer of the uterus. My total number of radical operations for cancer of the uterus has been 49, with 3 deaths, a mortality of 6·1 per cent.; 23 were vaginal hysterectomies, and of these 3 died; and 26 were supra-vaginal amputations of the cervix, and all these recovered. Of the 3 deaths among the cases of vaginal hysterectomy the first was from shock, the patient dying on the second day with gradual heart failure and œdema of the lungs; there was fatty degeneration of the heart. There was no local complication such as hæmorrhage or peritonitis. It appeared that she was unable to stand the shock of so severe an operation. The second death was from hæmorrhage. In this case there had been a deep laceration of the cervix quite up to the vaginal reflection on the left side and there was a firm cicatricial band running outwards from the laceration. This prevented the uterus being properly drawn down, and when the cervix was being freed in the neighbourhood of the laceration a large vessel, probably the uterine artery itself, retracted at once out of reach, and though it was ultimately secured a fatal quantity of blood had been lost. I consider the lesson of this case to be that either the supra-vaginal amputation of the cervix or vaginal hysterectomy is either absolutely contra-indicated, or becomes, at all events, an extremely hazardous operation if for any reason whatsoever the uterus cannot be fairly drawn down to the outlet of the vulva. This may happen on account of old perimetritic adhesions, or, as in this case, in consequence of cicatricial bands in the neighbourhood of a deep laceration, and equally so if there is extension of the disease beyond the limits of the uterus into the broad ligaments or utero-sacral ligaments. In all such cases, if the uterus is tethered so that it cannot be brought down fairly into reach, either operation becomes on this account alone extremely dangerous. The third death was from peritonitis, due, I feel satisfied, to an infection of the peritoneum by the breaking down of plastic adhesions in the neighbourhood of the wound when the pressure forceps were being removed. Up to and including this case I was in the habit of removing the pressure forceps at the end of forty-eight hours, by which time there is no risk of hæmorrhage. Since this case I have left them on, and also left the gauze plug undisturbed till the fourth day, by which time the adhesions shutting off the peritoneum must be considerably stronger than on the second day. As my list of 49 cases includes all the cases in which I have performed either vaginal hysterectomy or the supra-vaginal amputation of the cervix for cancer, it includes my early cases as well as those operated on quite recently; and, although I regard a mortality of 6·1 per cent. as satisfactory, and, indeed, encouraging, I think I may fairly expect that, profiting by the experience already gained, the mortality in a future series may be even less. My own feeling certainly is that, although vaginal hysterectomy for cancer is not a very dangerous operation, it is still distinctly more dangerous than the supra-vaginal amputation of the cervix. It is scarcely necessary, however, to mention that there are others who consider the supra-vaginal amputation as dangerous or even more dangerous than vaginal hysterectomy. I do myself consider that the supra-vaginal amputation, properly performed, is as difficult as vaginal hysterectomy; and, as regards the latter operation for cancer of the cervix, that, generally speaking, the only difficult part about it consists in the preliminary liberation of the cervix.

2. *Mutilation.*—As regards the amount of mutilation incidental to the two operations, obviously vaginal hysterectomy involves much more mutilation than the high amputation of the cervix, and still more so if the uterine appendages are removed at the same time, as is the practice of some operators. After the supra-vaginal amputation of the cervix the rest of the uterus generally remains freely movable, and, if the menopause has not occurred, menstruation may continue normally, and even pregnancy may occur, though I have not met with an instance of this among my own cases. The whole organism of the woman is not profoundly altered as it must be when the entire uterus is removed. After the supra-vaginal amputation the floor of the pelvis remains nearly in the same condition as before, while after vaginal hysterectomy it is necessarily much altered. Adhesions necessarily form to close the wound through which the uterus has been removed. Coils of intestine or portions of omentum may adhere to the scar, and may subsequently become a source of discomfort or of actual danger to the patient. On vaginal examination a condition of more or less fixity of the tissues at the top of the vagina is often felt after vaginal hysterectomy. Shock varies largely in proportion to mutilation; the more mutilation the more shock. After the high amputation I have not met with any degree of shock worth mentioning. It is quite true that in cases of vaginal hysterectomy also there is generally no shock. At the same time it appears to me that the latter operation is a more searching test of the resisting powers of the patient; if these are all that can be desired there will be no shock, but if they are seriously impaired there may be a severe or even fatal degree of shock. I have already mentioned a case (No. 2, Table II.) in which there was fatty degeneration of the heart, and in which the patient's death seemed solely attributable to the fact that her vitality was unequal to the strain of so severe an operation. In other words, patients can stand the supra-vaginal amputation of the cervix who would succumb if submitted to vaginal hysterectomy.

3. *Length of time patients remain free from recurrence.*—The next point—and it is an extremely important one—concerns the remote result in each series of cases. Are patients with cancer of the cervix ever cured by either supra-vaginal amputation of the cervix or vaginal hysterectomy? In order to find a satisfactory answer to this question there are at least two essential points. 1. In any case operated on for cancer where no recurrence has taken place after some years, and where, therefore, it is claimed that the patient has been cured by the operation, it is essential to have indisputable evidence that the growth removed was really malignant. The best way of doing so is for the specimen to be exhibited to the observation of independent experts, as may be done by showing the specimen before one of the medical societies. This has been done in all my cases of supra-vaginal amputation in which the disease has not recurred. 2. The second point—and it is one which involves the coöperation of the patient or her medical attendant or of both—is that it should be possible to keep the patients who have been operated on under observation. Only those who have tried it are aware of the difficulty of doing this, more especially among patients of the hospital class who are so constantly changing from one place to another, often leaving no address by which to trace them. I have tabulated in chronological order the 26 cases in which I have performed the supra-vaginal amputation of the cervix. An analysis of it brings out the following conclusions. Taking account only of those cases in which a period of two or more years has elapsed since the operation it will be seen that there are 22 cases in this category. Of these 22 cases three (Nos. 2, 5, and 19) were incomplete; one case (No. 21) was of doubtful malignancy. Subtracting these, it will be found as regards the remaining eighteen cases that eight (Nos. 1, 4, 7, 8, 9, 11, 13, and 18) were known to have had recurrence. In six of these (Nos. 1, 4, 7, 8, 11, and 13) recurrence took place within *one* year of the operation; in one case (No. 18) within *two* years of operation; and in one case (No. 9) within *three* years of operation. In the large majority of cases, then, recurrence, if it was going to take place, occurred within one year of the operation. In four of the eighteen cases the patients were lost sight of; these were Nos. 3 10, 14, and 15, and were all hospital cases. They, of course, may or may not have had recurrence. In the remaining six cases, out of the 18 (Nos. 6, 12, 16, 17, 20, and 22) the patients are still quite well at intervals of 8, 7, 5, 5 2 and 2 years respectively—that is, 33 per cent. remain well. Of the cases 23 to 26, one (No. 25) was incomplete; one (No. 24) was of doubtful malignancy; and two

(Nos. 23 and 26) are still quite well, but it is less than two years since the operation. I have also tabulated in chronological order the 23 cases in which I have performed vaginal hysterectomy for cancer of the uterus. Of these 23 cases 6 were cases of primary cancer of the body of the uterus, and do not concern this part of the question, though it seems right to include them when estimating the mortality. Subtracting these and the three fatal cases, there remain fourteen vaginal hysterectomies for cancer of the cervix. Four of these (Nos. 12, 17, 20, and 22) were incomplete; that is, although the whole uterus was removed I had reason to think that infiltrated tissue outside the uterus had been left. Of the remaining ten cases, five (Nos. 6, 9, 10, 14, and 16) were known to have had recurrence—in No. 6 within three years of operation; in No. 9 within two years; and in Nos. 10, 14, and 16 within one year. Of the remaining 5 cases, No. 4 remains well four years and a half since operation; No. 15 remains well one year and three months since operation; and Nos. 19, 21, and 23 remain well, but it is less than a year since operation. So that, although 5 out of 17 operated on by vaginal hysterectomy remain well, or 29·4 per cent., in only 1 case of those 5 has a period of two years or more elapsed since the operation. Only 5·8 per cent. of the cases then are in the class of two years' standing and upwards since the operation. In the series of cases of supra-vaginal amputation of the same standing 33 per cent. remain well.

The only conceivable explanation, as it seems to me, of the above figures, which show such favourable results for the supra-vaginal amputation and such unfavourable results as regards recurrence for vaginal hysterectomy, is that in the cases operated on by the supra-vaginal amputation the disease was in an earlier stage than in the cases treated by vaginal hysterectomy. The ultimate conclusions which a consideration of these two series of cases seems to warrant are: (1) that, when the disease is in a stage in which a cure by operation may be hoped for, the supra-vaginal amputation performed according to the method I adopt (which is fully described in my paper published in the Transactions of the Royal Medical and Chirurgical Society[2]) gives the patient as good a chance of cure as vaginal hysterectomy, and with somewhat less risk; and (2) that when the disease has become too far advanced for complete removal by the supra-vaginal amputation of the cervix it has also—at least, in the large majority of cases—passed beyond the reach of cure by vaginal hysterectomy. In the uteri I have removed for cancer of the cervix I have never met with an isolated simultaneous malignant deposit in the body of the uterus. In one case (No. 19) where there was a white nodule the size of a pea in the wall of the body of the uterus it proved on examination with the microscope to be only a small fibroid. This is an important point, because if it were the fact that isolated malignant growths occur at all commonly in the body of the uterus in cases of cancer of the cervix it would be a conclusive argument in favour of always performing vaginal hysterectomy. Such an association, however, if it really ever occurs, appears to be so rare that it may be neglected for practical purposes. It may be objected that my comparison of vaginal hysterectomy with the supra-vaginal amputation is unfair, because hysterectomy was generally adopted in cases rather more advanced than those in which the supra-vaginal amputation was performed. But I think the comparison is a proper one, more especially on this very ground, since the point for consideration is whether vaginal hysterectomy is *superior* to the supra-vaginal amputation, not whether it is as good as the supra-vaginal amputation. Obviously, among my six cases of supra-vaginal amputation, in which from two to eight years have elapsed without recurrence, the same result would have followed if vaginal hysterectomy had been performed instead. But there would clearly have been a fallacy in considering such a result as an argument in support of the superiority of vaginal hysterectomy. Vaginal hysterectomy must always be at least equal to the supra-vaginal amputation from the point of view of recurrence. The point to be decided is whether it is superior to the supra-vaginal amputation. One way in which this superiority might be proved would be that vaginal hysterectomy should be effectual as a means of cure in cases more advanced than those in which the supra-vaginal amputation has been shown to be efficacious. My own series of cases tells the other way, and goes to show that when the disease is too far advanced to be cured by the supra-vaginal amputation it has passed beyond the reach of cure by any operation whatever.

Wimpole-street, W.

[2] Vol. lxxvi., p. 101.

A CASE OF CHRONIC DYSENTERY OF MORE THAN FOUR YEARS' STANDING CURED BY REST IN BED AND A MILK DIET.

BY W. HALE WHITE, M.D.,
PHYSICIAN TO GUY'S HOSPITAL.

ALMOST the only form of dysentery we see in England is that which has become chronic. Often the sea voyage and the change of climate suffice to cure it, but when this is not so the treatment becomes a matter of great interest to us here. The chronic form is so different in its symptoms from the acute variety that we ought probably to regard it more as a chronic colitis left by the previous acute attack than as a specific disease, just as those patients whom we see in this country with anæmia subsequent to tropical malaria are, when examined in England, to be considered as suffering rather from the anæmia left as a result of the invasion of the blood by the plasmodium malariæ than from the actual presence of the parasite. Even if the amœba of dysentery be found in the stools passed in England it does not follow that this view is wrong, for the creature may be powerless for harm here, and further we know that long after an attack of diphtheria diphtheritic bacilli may be met with in the mouth, and the bacilli of enterica may be found in the pus of an abscess which forms in a patient who has suffered from this disease months before. It has often seemed to me that the treatment of intestinal affections is frequently too active, and that the great principle of giving an inflamed part rest is neglected; all sorts of drugs, many of which may cause enteritis, are given, and it is forgotten that lying in bed is one of the best ways of keeping the bowels quiet. The simplest way to give the surface of the colon freedom from irritation is to feed the patient on small quantities of milk at frequent intervals, say every two hours, a total of two pints a day for an adult being quite enough. If undigested curds are passed in the motions it may be peptonised; if the monotony of the taste is disagreeable it may be flavoured with a very little coffee. Should this diet lead to much constipation from four to eight ounces of olive oil thrown up the rectum every third day will give relief. Complete rest in bed is essential. I have seen this treatment cure long-standing cases of simple colitis without the administration of any drugs. In a very bad case of membranous colitis which had lasted ten years I have recently carried out the principle of giving rest so far as to have a right colotomy done, all the fæces for six weeks being allowed to pass through the artificial anus, thereby giving the colon absolute rest. When I suggested this in THE LANCET[1] Mr. Skene Keith wrote to say that he had adopted the same procedure. The principle of giving the colon rest was acted upon in the case described below. It will be observed that the patient had been in England, suffering from chronic dysentery four years and a quarter, that he had been going to many medical men who had given him all sorts of drugs, but that he had never been kept in bed for months on a milk diet. Nevertheless, this simple plan succeeded so well with him that although it is ten months since he was allowed to get up he has had no sign of a relapse and is now in robust health. That this is the correct treatment for chronic dysentery is borne out by such great authorities on the subject as Dr. Ward,[2] who says that most of the vaunted remedies are useless, but rest in bed and milk are essential for success; and Mr. Harry Leach,[3] who says the same, and adds that success with drugs is the exception, and that those cases do best which are least drugged. My reasons for publishing my case are to redirect attention to the papers of Dr. Ward and Mr. Harry Leach—and this is the more important as the subject of the treatment of chronic dysentery is almost ignored in many books which

[1] THE LANCET, March 2nd, 1895.
[2] Medical Times and Gazette, Feb. 22nd, 1873.
[3] Practitioner, December, 1870.

deal specially with dysentery—and to show that when the disease has lasted many years the patient may be restored to complete health. The milk diet should be continued until the pain, diarrhœa, and passage of blood or mucus have all ceased and formed motions have been passed for some time; the patient should not get up till at least a fortnight or three weeks after he has passed from milk to farinaceous diet. It will be noticed that the restricted diet was continued although the patient lost weight; provided that he is not allowed to become too weak this is of little importance compared with the advantage gained from rest to the colon.

On March 17th, 1894, Dr. H. J. Dring asked my opinion on the case of a patient aged thirty-three years. He was originally a healthy subject. In 1882 he left England for Minnesota, where life was rough and work hard, but except for a slight attack of malaria he kept well. In 1885 he went to Fiji; he was never well there and had dysentery severely in 1888. As he got no better he was sent to Melbourne and admitted into the hospital, where he was twelve weeks. When he left there he was better, but he relapsed immediately, and gradually getting worse and worse he finally started for England, arriving at Christmas, 1889. From then till 1894 he went to numerous medical men, who gave him drugs, but none of them put him to bed for long together, and although often the dysentery would entirely disappear for a short time it always returned, and he was consequently quite unable to follow any occupation, and had had to resign various posts. When I saw him the bowels were open four or five times a day, the motions contained much mucus and blood, he complained greatly of dull abdominal pain, especially in the left iliac region, his tongue was covered with a thick white fur, he was very anæmic, sallow, and wasted. He weighed 11 st. 2 lb., his height being 6 ft. 1½ in. I gave it as my opinion that the only treatment likely to cure him was complete rest in bed and milk diet for many months, and he consented to undergo it. He was put to bed on March 31st, 1894. On this day the bowels were opened five times, and the stools contained much blood and mucus, with a few small, hard lumps of fæces; there was much pain before the act of defecation. Some observers thought amœbæ could be seen under the microscope in the fæces, but others could not find them. The patient was allowed no food except two pints of milk a day. He was ordered ten grains of ipecacuanha powder thrice a day; and twenty grains of carbonate of bismuth, twelve minims of tincture of opium, twenty grains of compound tragacanth powder, and water to make one ounce thrice a day. The accompanying table shows the frequency with which the bowels were open. On April 6th the motions contained no mucus, but still a little blood. The pain was better. The mixture was stopped and the ipecacuanha was given in the form of a five-grain pill thrice a day as the patient was very sick. On April 10th, as the pills were passed unchanged, the ipecacuanha was put in cachets, but he continued to be sick, and so the ipecacuanha was in a few days left off. On April 16th there was still some blood and mucus in the motions and some pain in the abdomen. He was put upon a mixture containing ten grains of carbonate of bismuth, ten grains of bicarbonate of sodium, and ten minims of liquor morphiæ hydrochloratis. On April 25th the patient was allowed four oysters a day in addition to his milk. On May 1st he passed a formed motion for the first time. The pain in the side had decreased and the mucus and blood were much less abundant and less frequent than formerly. By May 25th the motions were always formed. Often there was neither blood nor mucus, and when either was present the amount was very slight. The pain had almost disappeared. From this date the progress was uninterrupted. Blood and mucus were only seen in the motions on one or two occasions. By July 3rd he had improved much in all respects. He was allowed some coffee. On July 27th the improvement continued. He was allowed some custard. On Aug. 22nd bread-and-milk made without crust and a little bread-and-butter were added to his diet. On the 27th he got up for a short time, having been in bed continuously for five months. His weight was 9 st. 6 lb. He thought he probably weighed less a month before. On Sept. 8th he was allowed fish; on the 14th he went out for the first time; and on the 21st he took ordinary meat. On Oct. 8th he went away into the country. He was directed to keep warm, to lie about as much as possible, to walk but little, and to avoid rich dishes, indigestible food, fruits, and most vegetables. On Dec. 2nd he wrote from the country saying that he had been "getting on steadily, gaining in strength and weight. I turned the scale at 12 st. 11 lb. yesterday, and can walk a good deal without getting tired." He went on to say that he had been most careful in his diet, and that he had lived chiefly on milk. During the spring of 1895 he was to all intents and purposes quite well, playing golf daily and taking ordinary plain food; and in May he went back to business, just thirteen months after the treatment began. He is still in excellent health. During the time he was under treatment an occasional enema of olive oil was given when it appeared necessary on account of constipation. None of the medicines above mentioned, nor some de-emetised ipecacuanha which was ordered, were continued for long, for it was found that on the whole he did better when he was not taking drugs.

Table showing the Frequency with which the Bowels were Open.

Date.	No. of motions.	Date.	No. of motions.	Date.	No. of motions.
March 31	5	April 13	1	April 26	0
April 1	2	,, 14	4	,, 27	0
,, 2	1	,, 15	4	,, 28	0
,, 3	3	,, 16	3	,, 29	0
,, 4	3	,, 17	2	,, 30	1
,, 5	1	,, 18	1	May 1	1
,, 6	2	,, 19	0	,, 2	0
,, 7	2	,, 20	0	,, 3	0
,, 8	6	,, 21	0	,, 4	0
,, 9	4	,, 22	0	,, 5	0
,, 10	3	,, 23	0	The bowels were never open oftener than once a day after this.	
,, 11	0	,, 24	2		
,, 12	1	,, 25	2		

Harley-street, W.

ON MALIGNANT DISEASE OF THE PERIDENTAL MEMBRANE.

BY A. HOPEWELL SMITH, L.R.C.P. LOND., M.R.C.S., L.D.S. ENG.

DURING the course of some recent investigations in the subject of the patho-histology of the peridental membrane I found among my specimens several marked examples of a new growth intimately associated with and springing from the fibrous periosteum of the teeth—a condition which seems to have escaped the attention of the writers of surgical and dental text-books. These periosteal tumours present on examination appearances which warrant more than a passing notice and afford a subject of great interest and importance to general and dental surgeons alike. The cases under consideration are not absolutely unique. For instance, Mr. Oakley Coles, at the annual meeting of the British Dental Association held at Cambridge in 1885, mentioned that he had at a previous meeting of the Odontological Society of Great Britain, exhibited a specimen of round-celled sarcoma attached to a molar tooth, the microscopic examination of which had been made by Dr. Klein. As a result of the study of my morbid anatomy specimens, of which I possess more than half a dozen, I have been induced to place on record my observations on this particular and somewhat rare affection.

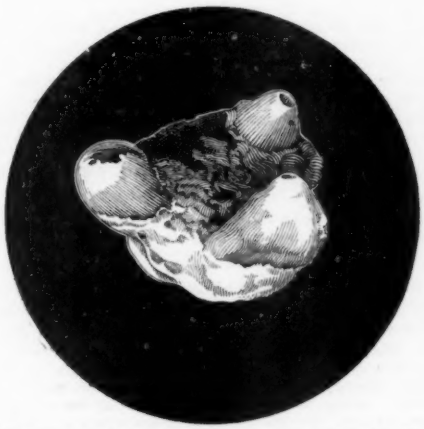
To those unfamiliar with the microscopical appearances of the peridental membrane a brief description of its histology is needful for a larger comprehension of the patho-histology of the disease. The alveolo-dental periosteum is a thin layer of connective tissue which surrounds the roots of teeth and occupies a position between them and their osseous sockets. It consists of bundles of large white connective-tissue fibres arranged chiefly in a transverse direction, and is, in fact, "much like any ordinary fibrous membrane,"[1] being freely supplied with bloodvessels and nerves. The cellular elements vary considerably, and include cementoblasts, osteoblasts, osteoclasts, and fibroblasts, together with cells and tissues of

[1] Tomes: Dental Anatomy, p. 93. 1894.

an "indifferent" nature.[2] In addition, there are occasionally found cementoclasts, calcospherite spherules, and the so-called "lymphatic spaces" described by Dr. G. V. Black. Of all these the fibrous tissues and fibroblasts predominate.

The chief points of interest in connexion with these peridental tumours are that they are found in connexion with the

FIG. 1.



Maxillary molar (sound); viewed from above; enlarged ¾. It shows the growth in its early stage, springing from the peridental membrane of the region between the roots.

roots of sound teeth, and that their characteristics are those of round-celled (alveolar) sarcomata.

1. *Seats of occurrence.*—The growth is confined, as its *locus principii*, to the periosteum of the molar teeth, the maxillary being much oftener affected than the mandibular series. It is generally seen to rise from a point situated at the junction of the roots with the body of the tooth (Fig. 1); but it may have its origin from the sides of one or even two roots (Fig. 2). Later, it generally fills up the whole of the inter-radicular region of the tooth (Fig. 3).

2. *Macroscopical appearances.*—The tumours vary in size from that of a split pea to a small nut, and have a smooth,

FIG. 2.

Maxillary molar (sound); side view; enlarged ¾. It shows the growth springing from the sides of the two buccal roots. A more advanced stage than Fig. 1. There is a slight deposition of tartar on the distal aspect of the tooth.

convoluted, rarely ragged surface. They are firm to the touch and are of a deep-red colour. The teeth themselves are non-carious and exhibit in their hard parts no traces of disease except slight attrition of their cusps and (in some cases) absorption of the apices of the roots. They are markedly loose, and signs of chronic inflammation of the periosteum, accompanied by an accumulation of tartar, are often noticed.

3. The *etiology* of the disease is obscure; but there seems to be a predisposition on the part of the growths to attack the fibrous membranes of the teeth of females about the period of the menopause. Long-continued and powerful friction, as shown by the wearing down of the cusps, is probably the exciting cause.

FIG. 3.

Portion of right maxilla excised for malignant disease; distal view; enlarged ¼. It shows the first maxillary molar *in situ* with its peridental membrane greatly increased in size by the growth, and also the secondary infiltration of the neighbouring parts. The tooth is sound, but loosened to a considerable degree. The sound canine tooth is seen in position at the back of the figure, the roots of the two bicuspids occupying the interspace. From original photographs.

FIG. 4.

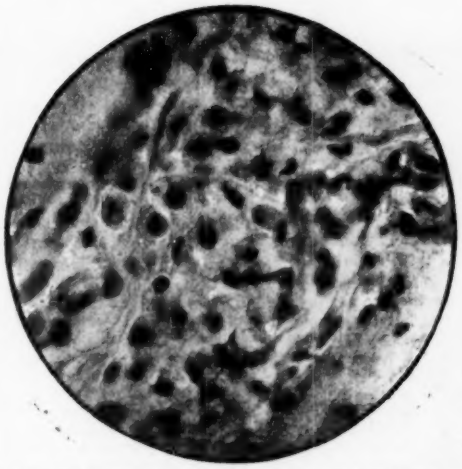


Photo-micrograph of a section (× 500 diam.) of a peridental sarcoma exhibited at a recent meeting of the Odontological Society of Great Britain.

4. The *subjective symptoms* point chiefly to long-continued sharp pain, increased on pressure, the course of the disease lasting sometimes several months. The pain is excruciating at times, and such as to render necessary immediate extraction of the loosened organ.

[2] Black: A Study of the Histology of the Periosteum and Peridental Membrane, p. 72. 1887.

5. *Objective symptoms.*—On examining the mouth, at first there is sometimes almost entire absence of swelling or of any usual inflammatory signs, and the tissues are not markedly indurated. There may be slight suppuration. If the disease is not far advanced diagnosis is only complete after removal of the tooth. Later, well-marked symptoms of malignancy appear.

6. *Microscopical appearances.*—The growths consist of masses of cells held together by a fine network of fibrous tissue which is very dense here or very loose there, and is in some places apparently undergoing fibrification or chondrification. In the centre of the growth this network is scanty, but the intercellular tissue is conspicuous outside. Vessels are scanty in the centre and have extremely thin walls; they ramify among the cells. In the outer portion they are larger (but not dilated) and have normal walls. The cells themselves are for the most part rounded in shape and considerably larger than red blood-corpuscles (Fig. 4). They contain one or more nuclei and are devoid of any definite cell wall. Great numbers of spindle cells exist. There is little hæmorrhage into the tissues, probably because of the small size of the growth, and because it has not advanced sufficiently to allow of large hæmorrhages to take place in its substance; but small extravasations of blood corpuscles are noticed here and there. Microscopically the growth is practically indistinguishable from granulation tissue, as has been pointed out by Mr. Knyvett Gordon; considered from a clinical aspect, however, there can be no doubt as to its malignant nature, as Fig. 3 shows. The jaw was excised for malignant disease of the antrum by Mr. W. J. Pilcher of Boston, to whom I am indebted for the specimen. The photograph exhibits the first right maxillary molar *in situ*, with its peridental membrane greatly enlarged by the new growth. Infiltration of the surrounding parts has taken place, the gum, antral mucous membrane, and alveolar process being alike affected, and the latter partially absorbed. There is also absorption of the apical regions of both the labial roots. The patho-histology of this growth is identical with that of the isolated cases already mentioned, and from the evidence at hand it seems to be clear that the latter are only earlier stages of the former.

To sum up, it may be said that sarcomatous disease of the peridental membrane is not rare in its earlier forms, but that it is very seldom met with in an advanced condition; and that removal of the molar tooth fortunately cuts short its career if taken sufficiently early, but if it is allowed to continue it constitutes another starting-place for malignant disease of the maxillæ.

Boston, Lincs.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

TINCTURE OF CUSPARIA.

BY SIR JAMES SAWYER, M.D., F.R.C.P. LOND., F.R.S. EDIN.,

CONSULTING PHYSICIAN TO THE QUEEN'S HOSPITAL, BIRMINGHAM.

FEW drugs are better known and less used than cusparia. I think many of our profession will agree that there should be a spirituous tincture of cusparia in the new Pharmacopœia. In officinal tinctures of mild aromatic and non-astringent bitters we are not too well off; and a watery infusion, which is the only preparation of cusparia in the present British Pharmacopœia, is unwieldy for many purposes. A consideration of the history and constitution of the drug suggests that cusparia has claims to a professional revision of its therapeutic properties. Perhaps it is owing to certain peculiar circumstances of fraudulent commercial substitution, which were pointed out long ago and which are well known, that cusparia has not come into usual employment in European practice, although it has been much vaunted as the chief ingredient in a popular cordial, and although it appears to have found extensive therapeutic consumption in South America and elsewhere. I have been prescribing a tincture of cusparia bark, which I have had made with proof spirit, and of the strength of two and a half ounces of the bark to one pint, and I have directed its preparation in a manner similar to that given in the officinal directions for tincture of cascarilla. Recent researches (1892) of Beckurts and Nehring show that cusparia bark contains, besides a volatile oil and other constituents, four alkaloids—namely, galipine, galipidine, cusparine, and cusparidine—all of which are crystallisable bases. I think it will be found that a proof spirit tincture would better represent the essential constituents of the drug than an aqueous preparation, such as an infusion. The profound and practical Paris, in his classic "Pharmacologia," wrote of cusparia bark: "Its active matter is taken up by cold and hot water, and is not injured by long decoction, but the addition of alcohol precipitates part of the extractive. Alcohol dissolves its bitter and aromatic parts, but proof spirit appears to be its most complete menstruum." I find that a weaker tincture than that which I have indicated—namely, of the strength of one ounce of cusparia to one pint of proof spirit—is given as a non-officinal formula by Beasley.

Birmingham.

A CASE OF FORWARD DISLOCATION OF THE SEMI-LUNAR BONE.

BY LEONARD P. GAMGEE, F.R.C.S. ENG.,

ASSISTANT SURGEON TO THE GENERAL HOSPITAL, BIRMINGHAM; SURGEON TO THE CHILDREN'S HOSPITAL, BIRMINGHAM.

A MAN aged fifty-two was admitted to the General Hospital, Birmingham, on April 9th, 1895, complaining of a swelling over the front of the left wrist and of inability to flex the joint. He stated that four months previously, while working in a mine, he was standing with his back to the wall, with his left elbow flexed and with the back of his left arm pressing against a beam which projected from the wall. While he was in this position a truck came along and struck his left hand in such a way that his wrist was forcibly hyperextended. He found, immediately after the accident, that he was unable to flex his wrist, and very soon a great deal of swelling appeared all round the joint, both back and front. This general swelling subsided during the next fortnight. At the end of that time the condition was the same as on his admission. When he was admitted the following conditions were present. The power of extension of the left wrist was normal, but the joint could not be flexed beyond the horizontal position. On the front of the carpus in the middle line was a hard and fixed swelling, apparently immediately under the skin. From the size and position of the swelling I diagnosed that it was one of the carpal bones—probably the os magnum—dislocated forwards, and, from the fact that the patient felt numbness and tingling along the palmar surfaces of the first three fingers, that the median nerve was stretched over the surface of the bone. It was quite impossible to reduce the dislocation, and so two days after his admission I made a longitudinal incision over the swelling and found it to be caused by the semilunar bone, which had been dislocated forwards and then displaced downwards over the os magnum, the median nerve being stretched over the front of the bone. The nerve was freed and the bone removed, the wound healing by primary union. I last saw the patient on June 11th and found that the movements of his left wrist-joint were perfect, the left hand being practically as useful as the other. Subluxation backwards of one of the carpal bones, especially of the os magnum, is not very uncommon and is generally caused by forcible flexion of the hand. Forward dislocation of one bone, unless compound, is, on the contrary, extremely rare, the chief obstacles to displacement being the concave form of the palmar surface of the carpus and the resistance offered by the anterior annular ligament. In this case removal of the bone was the only possible way of restoring the function of the wrist, reduction such a long time after the injury being quite out of the question.

Birmingham.

PRESENTATIONS.—Dr. James W. Norris Mackay, of Elgin, has been presented by the members of the Northern Counties branch of the British Medical Association with his portrait (painted by Sir George Reid), in recognition of the "valuable, disinterested, and unremitting services rendered by him as secretary and treasurer of the branch since its inauguration in the year 1863."—Mr. S. Boake, L.K.Q.C.P., L.R.C.S. Irel., who has conducted, at Chard, classes in connexion with the St. John's Ambulance Association, has been the recipient of a gold pencil-case and an illuminated address from the members of the classes as a tribute of their esteem.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Procemium.

ROYAL INFIRMARY, LIVERPOOL.

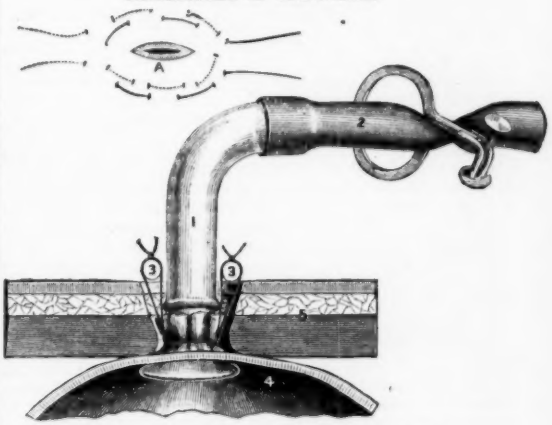
A CASE OF PERFORATED GASTRIC ULCER; LAPAROTOMY; GASTROSTOMY; RECOVERY.[1]

(Under the care of Mr. F. T. PAUL.)

IT is well known to the readers of THE LANCET that we have constantly urged the publication of cases in which operation for perforating gastric ulcer has been performed, whether successful or not, and have done our best to spread a knowledge of the results obtained by different surgeons under the many and varied circumstances amid which cases have presented themselves for relief. There is probably no class of case which is calculated to cause greater anxiety to the medical attendant than one of this nature. Any additional success attained, any fresh suggestion of value in the treatment such as that made by Mr. Paul, may induce those in responsibility to recognise that not to recommend operation is to deprive the patient of a very good chance (and usually the only one) of recovery. The case of successful operation by Mr. Maurice, referred to by Mr. Paul, was published in THE LANCET. We have also given an abstract of a paper by Mr. Warrington Haward,[2] in which he described the case of a woman aged twenty-six who had been under his care, and on whom he had operated. As excision of the ulcer was not possible he had sutured its edges to the wound. The patient died from abscess of the lung six weeks after the operation.

About 1 A.M. on Dec. 13th, 1894, Mr. Paul was requested by Dr. Sidney Palmer to see with him a woman in whom he suspected that a gastric ulcer had recently perforated. The patient was thirty-one years of age, married, and a sufferer for years from dyspeptic symptoms. Six months previously the pain had become worse after food, so that she frequently induced vomiting to obtain temporary relief. The vomited matter was often dark brown and sometimes nearly black. Notwithstanding her constant pain and the advice of her medical attendant, she was far from careful in her diet, and on the night of Dec. 12th had a cold meat supper. This was shortly followed by the usual pain and vomiting, upon which there immediately supervened the most violent and agonising pain in the upper part of the abdomen. Her friends gave her a teaspoonful of brandy and applied hot fomentations, but without relief. Dr. Palmer was sent for. He found her in a condition of profound collapse and still suffering intense pain, so he injected morphia and took means to encourage reaction. About midnight the patient was beginning to get warm again, and the pulse to regain a little vigour. Mr. Paul was consulted as to the desirability of attempting relief by operation. On his arrival reaction was still further established. The skin was fairly warm, the pulse 130, the pain still severe, and the abdomen as rigid as a board from muscular contraction. The diagnosis seemed to be unquestionably correct, and there was no hesitation in advising the patient to submit to an operation. Unfortunately it was not convenient that it should be done where she was staying, so she was removed to the Royal Infirmary, Liverpool, and left in charge of the house surgeon, Dr. J. P. Nixon, with instructions to telephone as soon as she had fully recovered from the collapse, which of course had been somewhat deepened by the necessity of removing her. Mr. Paul went to the hospital on receipt of the message and commenced to operate at 7 o'clock, which was nine hours after the first onset of the symptoms. An incision was made four inches in length between the ensiform cartilage and the umbilicus. As soon as the peritoneal cavity was opened sour-smelling gas and greenish liquid escaped, and the neighbouring viscera showed signs of commencing peritonitis. The ulcer, though in a most awkward position, was easily found on account of its very large, hard, and thick base, which made it feel like a malignant infiltration. It was placed at the cardiac end of the lesser curvature, and it required some tension to keep it in view, even although the left rectus muscle was cut across to the margin of the costal cartilages. The rent was transverse and measured about half an inch in length. Excision of the ulcer was out of the question, and so awkwardly placed was the orifice that it appeared doubtful if it would be possible to close it with sutures. However, with small curved sewing-needles held in dressing forceps and armed with fine green catgut Mr. Paul was able to make some sort of a closure, over which he drew and stitched a tag of fatty omentum. But the coats of the stomach were so friable, and the position of the orifice so difficult to get at, that he did not consider the closure trustworthy. The front end looked pretty well, but at the back, where it was out of sight, the condition of the wound was very doubtful, whilst very little reliance could be placed on the sutures, even where satisfactorily tied, on account of the extreme friability of the tissues. It seemed that the first accumulation of either gas or fluid in the stomach would find a ready exit through the stitches, and therefore it was determined to drain the stomach by introducing a glass tube as recommended for gastrostomy and shown in the accompanying engraving. This is very easy to accomplish, and apparently is not a source of danger, but it remains for time and experience to approve or condemn such a proceeding. Stomach drainage was employed here because Mr. Paul believed that the ulcer would certainly leak again unless placed under the most favourable conditions, and because it is a known fact that this secondary leakage is one of the prominent causes of failure in otherwise hopeful cases. The glass gastrostomy tube was fitted with a short piece of rubber tubing, which was closed for the present. Next the peritoneal cavity was well washed out with simple warm water, and the wound closed without drainage by passing fishing-gut sutures through all layers of the abdominal wall. On taking the patient back to the ward the stomach-tube was allowed to discharge in a jaconet bag containing antiseptic wool. She was kept warm and a brandy enema given. At first there was some abdominal pain, but it was not very severe. She felt sick and twice brought up a mouthful of brownish fluid. Copious vomiting was probably impossible with an open tube in the stomach. Thirst was avoided by frequent sips of warm water in which small doses of salol were occasionally given. For the first few days there was no great cause for anxiety. The temperature ranged between 98° and 100° F., and with the help of a little morphia she slept sufficiently and suffered but little pain. The pulse came down to 100. The urine was drawn off by catheter, and nutrient enemata were given every three hours. On Dec. 16th, the fourth day after the operation, stomach feeding was attempted by giving a little meat essence, but it had to be discontinued

GASTROSTOMY IN ONE STAGE.



A, Method of passing the ligatures in the stomach. 1, Glass tube. 2, Rubber tube with clip. 3, 3, Sectional view of glass rods over which the ligatures are tied. 4, Interior of the stomach. 5, Abdominal wall.

[1] Read at the Liverpool Medical Institution on March 28th, 1895.
[2] THE LANCET, May 6th, 1893.

on the 17th on account of fresh hæmorrhage from the ulcer, which continued on the 18th and 19th, and was unfortunately followed by a severe diarrhœa, which so reduced the patient that stomach alimentation became imperative. She was consequently fed on the 20th with prepared peptonised milk, and her condition began to improve. From this time there was no further cause for grave anxiety, and the rectal feeding, though not entirely discontinued, was no longer relied on. The sweetness of the peptonised milk caused her to turn against it in a few days, and the foods which proved the most successful were soup made from beef with vegetables in a muslin bag, and to which raw meat juice was subsequently added, and raw scraped-meat sandwiches. The latter caused neither pain nor sickness, and she improved rapidly on them. Fresh milk was disastrous in any form; even when partially peptonised it caused vomiting and a return of the hæmatemesis. The necessity for so much care in the feeding was that, apart from the operation and after the patient had recovered from it, the case was still a very bad one of gastric ulcer with advanced chlorosis and loud hæmic bruits and possibly mitral disease, for she had had three bad attacks of acute rheumatism. The history of the gastrostomy tube is as follows. During the 13th and 14th the discharge was slight. From the 15th to the 27th it was copious, but none escaped beside the tube, even although the ligatures came away on the 22nd. On the 27th the tube was removed, but with so much difficulty that it was decided not to use such a trumpet-shaped end in future cases, unless it was intended that the tube should remain in permanently. For a few days the discharge continued free at intervals, then diminished, and at the end of a fortnight the opening had closed. On careful diet the patient continued to improve. In the middle of January, 1895, she was allowed to get up, and at the end of the month she was discharged in a perfectly satisfactory condition of health.

Remarks by Mr. PAUL.—The cases which have been reported since Mr. Pearce Gould opened a discussion on this subject at the Bristol meeting of the British Medical Association all tend to confirm the views he expressed, both as to the causes of failure and the best means to attain success. The former may shortly be stated as (1) collapse; (2) imperfect cleansing of the peritoneum; and (3) further leakage of stomach contents. There is a general agreement as to the best way of dealing with the first two difficulties. Fatal collapse is to be avoided by operating at the right time—that is, during the stage of reaction and before peritonitis has fully developed. For this the surgeon must depend chiefly upon the promptness of his medical *confrères*, and also by making his operation as short and simple as is consistent with the object in view. The peritoneum is, I think, best cleansed by thorough flushing with simple hot water at a temperature of about 100°, and if boiling the water limits the supply or causes a moment's delay it is far better to use it unboiled. What are the few germs in the water to the myriads already in the peritoneal cavity, a proportion only of which can be washed out? Peritoneal drainage is better not resorted to, except in those cases where peritonitis is fully established, and most of these will end fatally any way. The third cause of failure—further leakage—is generally due to the inaccessibility of the ulcer, and the best means to be taken to avoid it have not yet been agreed upon. When the orifice can only be imperfectly closed it seems to me that it may prove wise to drain the stomach by a temporary gastrostomy, as in the case just related. When it is quite inaccessible I think it might possibly be sutured through an incision in the anterior wall of the stomach. This sounds severe, but it is decidedly less so than excision of the ulcer, which has been done, and in experimentally performing gastro-enterostomy upon dogs through a similar incision it was found that the healing of the wound in the stomach was always very perfect. However, it is not every ulcer that could be got at even in this way, though I can imagine cases in which I would be willing to give it a trial. The readiest method of meeting the difficulty was adopted by Mr. Maurice of Reading when he introduced an indiarubber tube into the stomach through the perforation and packed it round with gauze. In so doing I suppose one would probably frequently pave the way for future difficulties, but when the patient is too collapsed to permit of a more prolonged operation it seems to be the best and, indeed, the only reasonable method to adopt. I cannot think that washing out the stomach is generally a desirable proceeding. It prolongs the operation and must tend to increase the size of the perforation; moreover, if the sutures have any holding power at all they will outlast the time that the contents can remain in the stomach. Excision of the ulcer gains no support from the cases recorded by English surgeons, and if simple suture is sufficient, as has been amply proved, the much more severe operation of excision ought to be abandoned. The impression given to me by the case recorded above is that when taken at the right time, in a fairly good subject and with an accessible ulcer, laparotomy for perforated gastric ulcer will be a very successful operation; and the only reason why there are so few recoveries reported up to the present is that the medical world has not yet fully recognised that success depends mainly upon early operation. In conclusion, I would like to call attention to a point in the etiology of these gastric ulcers insisted on by my friend Dr. William Williams of Liverpool. He believes that the original cause is in many cases to be traced to the use of corsets. I am strongly of opinion that he is right, and have on more than one occasion confiscated my patients' stays and replaced them with the knitted woollen article with shoulder straps, which may be obtained from the sellers of Jaeger clothing. It contains a few "bones," but cannot be laced, and is, therefore, free from the worst defects of this pernicious article of female dress. Several of the so-called Jaeger stays are as harmful as any others, being, indeed, nothing but the vicious Parisian corset dressed up in Jaeger material.[4]

Medical Societies.

BRITISH GYNÆCOLOGICAL SOCIETY.

On Some Difficulties in the Use of the Curette.—Exhibition of Specimens.

A MEETING of this society was held on June 13th, Dr. CLEMENT GODSON, President, being in the chair.

Dr. MACPHERSON LAWRIE showed three specimens:—1. Removal of Suppurating Ovarian Tumour with Purulent Peritonitis and Adhesions. 2. Fibroma of the Uterus removed by Enucleation. 3. Total Extirpation of the Uterus and Ovaries for Prolapse. The patient, aged thirty, single, was confined of a child five years ago. Later she suffered from "bearing down" and hæmorrhage. When seen the uterus was prolapsed. An attempt was made to retain it in position with pessaries, but ineffectually, and it was decided to remove the uterus and appendages. Later she suffered from rectocele, which was cured by a plastic operation.—The PRESIDENT questioned the advisability of removing the uterus and ovaries for prolapse in a woman aged thirty.—Dr. ROUTH took exception both to the removal of the uterus, the prolapse of which might have been treated by some less radical method, and also to the removal of the ovaries. There was very little likelihood of menstruation persisting after hysterectomy; and the presence of the ovaries helped to retain the womanly characteristics.

Mr. CHRISTOPHER MARTIN showed two Uteri removed by Total Extirpation, after removal of the appendages two years previously, in the first case for double pyosalpinx, and in the second for double cystic disease. Menstruation persisted, in the first case very profusely, and in the second with great pain. Other means having failed, the uterus was removed. It was found that a piece of ovary had been left behind in the first case, and in the second part of the tubes, whilst the anterior wall of the uterus in this case contained a myoma. Mr. Martin attributed the persistence of menstruation to the fact that the menstrual nerves had been left intact.—Dr. LEITH NAPIER observed that the thickness of the uterine wall in the second case was suggestive of fibrosis, which often caused a continuance of hæmorrhage, even after removal of the ovaries.—Mr. TAYLOR (Birmingham) said that these were examples of a class of case in which hysterectomy had an important place, contrasting in this respect with Dr. Lawrie's case, in which the procedure was open to criticism.

Mr. TENISON COLLINS (Cardiff) showed an Impacted Ovarian Cyst which simulated a Myoma of the Uterus.

Dr. FANCOURT BARNES read a paper on Some Difficulties in the Use of the Curette. Curetting, he said, though a simple procedure, was not devoid of risk; it should, therefore, be undertaken with care. The first step was dilatation, which should be sufficient to admit the passage of

[4] The patient has gained 23 lb. in weight since the healing of the ulcer and the adoption of a "rational" corset.

the index finger. There were two methods of dilatation. The rapid method was by the use of Hegar's or other dilators; at the best it was a somewhat rough procedure, involving tearing and bruising of the cervix. He therefore preferred, as a rule, the gradual method, which was done by means of tents. They were safer and produced greater dilatation. Laminaria tents were the best, as the salts with which they were impregnated rendered them aseptic, and even antiseptic. They should be four inches long. Spoon tents were to be condemned. Under an anæsthetic the curetting was next proceeded with; a sharp curette or spoon might be used, or the dull wire curette or finger nail. The immediate risks were perforation of the uterus and hæmorrhage; later, atresia of the canal and pelvic inflammation. The two principal conditions calling for the use of the curette were chronic endometritis and retained products of conception. Cases were then related illustrating these conditions. In conclusion, the following questions were submitted for discussion: (1) What are the symptoms which point to the clear necessity of curetting the uterus? (2) which is the safest and most natural method of dilating the uterus? (3) should the curette be used in cancer of the uterus, more especially when the growth is at the fundus? (4) is it advisable to resort to the use of the curette for diagnosis? (5) is it possible to establish a satisfactory system of drainage of the uterine cavity after curetting?—The PRESIDENT, in thanking Dr. Fancourt Barnes for his paper, said he believed it was the first time the subject had been brought before the society. As curetting was a popular operation, it was advisable that the selection of suitable cases and the best method of its performance should be discussed. Whilst many operations rose for a time into prominence and then lapsed, he thought it unlikely that this one would fall into disuse because the resulting benefits were often strikingly evident.—Dr. MACPHERSON LAWRIE had done many curettings, but felt a certain anxiety about every case; yet no operation gave more satisfactory results. He used laminaria tents and a sharp curette; the cavity was then flushed with boiled water. Complete rest was required for some days after.—Surgeon-General HARVEY had operated in India both on Europeans and on natives, and had not found an anæsthetic necessary. He agreed with Dr. Barnes that sponge tents should be abolished. Even laminaria tents were not always satisfactory, for sometimes they expanded in an hour-glass fashion and their extraction was then difficult.—Professor JAPP SINCLAIR had also not found chloroform necessary; he gave a hypodermic injection of morphia an hour before the operation, and an alcoholic stimulant half an hour before. He had never seen any bad symptoms follow curetting, nor need there be any if care was used. Tents were the best dilators; it did not matter much how long they were left in. It was seldom necessary to introduce a finger, but when desired Hegar's dilators could be used, up to No. 12. The curette was valuable for diagnosis of cancer of the body, whilst in cases of suspected cancer of the cervix if a sharp curette were drawn across the diseased part, if it brought away tissue, the disease was cancer; if not, it was erosion. He believed this sign to be pathognomonic.—Dr. GREIG SMITH doubted the value of the sign given by Professor Sinclair in his last remarks. In his experience a sharp curette applied to an erosion would certainly bring away tissue. He usually neither dilated nor gave an anæsthetic; by pulling the uterine canal straight by means of a vulsellum on the posterior lip any moderate-sized curette could be introduced.—Mr. CHRISTOPHER MARTIN said there was one condition which had not been referred to, but which was capable of causing serious trouble after curetting—viz., slight disease of the appendages. In America curetting was done for this very condition, but he did not think it safe. A careful examination of the appendages should therefore always be made before curetting. In Birmingham they always gave an anæsthetic and used metallic dilators; a sharp curette was used, after which the cavity was swabbed out with iodised phenol and packed with iodoform gauze. He felt sure it was generally better to use an anæsthetic.

The discussion was then adjourned to the next meeting.

SUCCESSFUL VACCINATION. — Mr. T. Davies, public vaccinator for the suburban district of the Whittlesea union, has been awarded for the second time in succession the full amount of the Government grant for efficient vaccination.

Reviews and Notices of Books.

Diseases of the Ear. By A. MARMADUKE SHEILD, M.B. Cantab., F.R.C.S. Eng. Cassell and Co. 1895.

MR. SHEILD'S excellent little work on Diseases of the Ear is a vindication of the fitness of a surgeon on the general staff of a hospital to manage with success the aural department in conjunction with it. The pages he has written afford a clear demonstration of the methods of treating aural disease in accordance with the established principles of general surgery. He views the subject from no cramped and narrow standpoint, but brings ably to bear the experiences gained in the treatment of disease in other regions of the body. The divergencies from accepted traditions are not a few, but Mr. Sheild's defence of them is sustained by copious illustration from his case-books. The necessity of a sound knowledge of the principles of general medicine and surgery is his watchword throughout. The usual lengthy chapters on the anatomy and physiology of the ear are replaced by a brief and readable "sketch" in which the main facts are concisely summarised; the condensation has not been gained at the expense of accuracy, though on page 14 the statement that "the distance of the [mastoid] antrum from the lateral sinus is three to six *inches*" is clearly a misprint. In the chapter on examination for diagnostic purposes emphasis is rightly laid on the superiority of the watch and conversation tests over other more subtle methods; but the description of the use of the tuning-fork is for no very obvious reason divided into two portions separated by some pages dealing with other matters.

The diseases of the auricle and external auditory canal are fully described, and Mr. Sheild takes up a firm position with reference to the effects of impacted cerumen, holding that when perforation of the tympanic membrane coexists the latter is due to pre-existing disease of the membrane or of the middle ear. This view, though running counter to the commonly received opinion, is certainly supported by the previous history of many of these cases.

The subject of aural exostoses receives full attention, and the value of the electro-motor for drilling and removing these growths is pointed out. The remarks on impacted foreign body are very practical, but the author states that he has had no experience of the use of the galvano-cautery, which has proved most useful in the hands of others when dealing with these cases. The chapters on the inflammatory affections of the middle ear are well written, and especially that dealing with chronic otitis media associated with perforation. The cerebral complications of ear disease are the subject of a brief but clear sketch, though it would have been well if more details had been given concerning the operative treatment of these cases. The operation preferred for adenoids is that performed by means of the steel nail, the patient being placed on his side, with the head over the edge of the table. Mr. Sheild insists strongly on the importance of after-treatment in these cases, relying chiefly on the application of astringents to the naso-pharynx and a methodical use of the Politzer bag. The chapter on nerve deafness is good, and an intelligent account is given of the methods of detection of malingering. At the end of the book are arranged some useful prescriptions for local and general medication. The little work is neatly got up and is freely illustrated. It may be regarded as a safe guide to the treatment of diseases of the ear.

Atlas of Clinical Medicine. By BYROM BRAMWELL, M.D. Edin. Vol. III., Parts I. and II. Edinburgh: T. and A. Constable. 1894 and 1895.

THE bulk of the first of these two parts of Dr. Byrom Bramwell's admirable Atlas consists of the substance of

an address to the Dermatological Society of Great Britain and Ireland delivered about a year ago. It deals with the subject of the thyroid treatment of skin diseases—a subject which the author has taken up with enthusiasm and prosecuted with assiduity. The cases, which are here given in full detail, and are abundantly illustrated by a large series of photo-lithographs, seem to speak strongly in favour of the plan; but it may be pointed out that the majority of them were cases of psoriasis, and that few skin affections are more amenable to treatment, or perhaps we should say tend so frequently towards temporary alleviation under the influence of rest, diet, and local applications. Nevertheless, the results recorded by Dr. Bramwell, not only in psoriasis, but in lupus and some other skin diseases, are so uniformly successful, and, as the photographs show, so complete in result, that scepticism is disarmed, and we are forced to admit the beneficial influence of the administration of thyroid extracts (local treatment not having been used), although it may be difficult to explain the precise *modus operandi* of the remedy. It might be thought that in cutaneous affections the determination of the efficacy of any particular line of treatment could be easily determined, but it must not be forgotten that even here, as in other therapeutic trials, much depends upon the attitude of the observer. Thyroid therapeutics in skin disease have been found wanting by other observers; but Dr. Bramwell hints that in many cases want of faith in the efficacy of the remedy may in such instances have led to a too early abandonment of the trials or a too timid exhibition of the drug. At the same time, the remedy is one which does require caution in administration, and whether, after all, in such an affection as psoriasis it is worth while to substitute this powerful measure for treatment of a less heroic kind must be left to dermatologists to determine. Besides this exposition the first part of this third volume of the Atlas contains an excellent account of acute anterior poliomyelitis (infantile paralysis) and the record of an interesting case of malignant disease. The second part, just issued, also enters fully into progressive muscular atrophy and the muscular dystrophies in general. These conditions are admirably adapted for pictorial representation, as may be seen in Professor Curschmann's recent "Klinische Abbildungen." Dr. Bramwell gives several plates to illustrate this part of the text; the issue also including descriptions and drawings of hereditary syphilis, ichthyosis, and an excellent coloured portrait of cyanosis. The thoroughness with which the author treats his subjects and the high standard of excellence maintained in this Atlas render it one of the most valuable publications of the day, and testify to the energy and clinical enthusiasm which have produced it.

The Natural History of Plants. By ANTON KERNER. Translated and edited by F. W. OLIVER, M.A., D.Sc., with the assistance of MARIAN BUSK, B.Sc., and MARY EWART, B.Sc. Parts 7 to 11. London, Glasgow, and Edinburgh: Blackie and Son. 1895.

WITH the seventh part of the serial issue of the English edition of the work of the Vienna professor of botany the first volume was completed. That portion of the book dealt with questions of morphology in a manner at once attractive and profound, for the work, whilst being strictly scientific, is written in so lucid and charming a style that its popularity on the Continent is not surprising. The present translation enables the botanical student in this country to share in the rich storehouse of instructive facts that are arranged so plentifully in these pages. There is a masterly freshness and originality of treatment that show that the author has attained to the most intimate familiarity with the conditions of plant life and the innumerable adaptations of structure to environment that the plant exhibits. No less interesting are the sections of the second volume which have so far been published; indeed, in many particulars they open up questions of surpassing interest which have engaged the attention of the greatest masters in science, for they deal with the subject of the reproduction of plants, which is introduced by descriptions of the asexual modes as seen in the spores and thallidia of cryptogams and the buds on stems and roots of higher plants. But the main share in perpetuating the cycle of vegetable life on the globe is effected by fertilisation and fruit formation, and it is in the study of the various means adapted to this end that so much has been learnt by the patient researches of botanists. This subject is introduced by the description of fruits and fruit formation in cryptogams and phanerogams, the fruit being defined as "the product of fertilisation, and at the same time constituting the first step towards the renewal of the fertilised plant." It is shown how cryptogams—e.g., ferns and mosses—are fertilised under water, and most phanerogams in the air, hence it is that most of the latter are provided with blossoms which are lacking to the former. The various means for the preparation, storage, and distribution of pollen, the part played in fertilisation by wind and by insects, which go far to explain the diversity and beauty of the floral world—these and a multitude of cognate questions are handled by the author in a most fascinating way. We can well imagine how the perusal of even a few pages of such a book as this would arouse an enthusiasm for botanical study in the most indifferent, and now that the season is at hand when the material for this study abounds in every field and hedgerow we can recommend no sounder guide, at once instructive and alluring, than this work, which we think will do not a little to revive an interest in botany beyond the circle of the specialist. Many a hard-working practitioner of medicine has in times past gained wholesome recreation and renewed his energies by devoting his spare moments to the contemplation and study of the natural phenomena that surround him in his daily walks, and not a few members of our profession have aided considerably the advance of natural knowledge. And, although the mass of other technical subjects may have crowded botany out of the ordinary curriculum of medical study, we do not doubt that its pursuit will still be taken up from a pure love of nature. To such we heartily commend this work, the great feature of which is that it has imparted a fresh interest in a subject too long under the thraldom of a rigid system of classification. Botany, or, as the title of this book gives it, "The Natural History of Plants," has gained immensurably in interest by the study of plant life as distinct from plant form.

LIBRARY TABLE.

A Handbook of Pathological Anatomy: Based upon the Catalogue of the Pathological Museum, University College, Liverpool. By RUBERT BOYCE, M.B., George Holt Professor of Pathology, Pathological Superintendent, Royal Infirmary, Consulting Pathologist, Royal Southern Hospital; and J. HILL ABRAM, M.D., M.R.C.P., Assistant to the Professor of Pathology, Assistant Physician, Stanley Hospital, Pathologist, Royal Infirmary. Liverpool: T. Dobb and Co. 1895.—This volume, consisting of about 500 pages, is an elementary treatise on selected subjects in pathological anatomy, combined with references to, and short notices of, illustrative museum specimens. The general plan is excellent and has been well carried out. Even without inspection of the specimens, anyone having a moderate acquaintance with pathology is likely to profit by a perusal of the full and clear account of the various lesions and abnormalities described. Beginners, however, would probably find one of the systematic elementary manuals more useful.

Access to the specimens being presupposed, illustrations are naturally not supplied in the text, and the references to minute structure are comparatively few. The sections on the abdominal and pelvic viscera and on the bones and joints are especially copious and worthy of attention.

St. John Ambulance Association. Hints and Helps for Home Nursing and Hygiene. By E. MACDOWEL COSGRAVE, B.A., M.D., Ch M., F.R C.P.Irel. With a Chapter on the Application of the Roller Bandage by R. J. COLLIE, M.D. Ninetieth Thousand. London: St. John's Gate, Clerkenwell. 1895.—This is the authorised text-book on nursing issued by the St. John Ambulance Association, and is arranged according to the syllabus of the second (or nursing) course of lectures. It contains a large amount of useful information on the general management of a sick-room, as well as on dietary and the use of medicines and other remedies. There is a short special chapter on the nursing of sick children. In the chapter on baths, those from 110° to 120° F. are described as "very hot." This is strictly correct, and the author might have added that no one ought to be suddenly immersed in water even at 106°. For very hot baths the temperature should at first be about 103°, from which it may be raised by successive additions of hot water to about 110°, and the attendants should keep in mind that faintness may result.

Venice ("Story of the Nations" Series). By ALETHEA WIEL, author of "Vittoria Colonna" &c. London: Fisher Unwin. 1894.—Venice, or rather the Venetian Republic, occupies too conspicuous a place in the history of medicine to make its political and social life other than profoundly interesting to physicians and surgeons. To know and to appreciate under what vicissitudes the great school of Padua—the *alma mater*, among others, of William Harvey—rose and fell and rose again must be matter of more than mere "intelligent curiosity" to the profession. For such knowledge and for the intellectual "coign of vantage" it gives Madame Wiel provides admirably in the flowing, picturesque, and exceptionally sound narrative conveyed in this volume. Amid what environments Luigi Cornaro practised what he preached towards attaining his hundredth year, or Geronimo Mercuriali composed his masterworks on the lines of that Hippocrates whom he so usefully edited, may be pleasantly learned from her animated and impressive pages. The book is one of the best of the series to which it belongs, a recommendation to which no student of contemporary literature can fail to attach its true value.

MAGAZINES FOR JULY.

The Practitioner.—This estimable little monthly keeps up its usual high standard of excellence. In one of the annotations on events of the past month is a reference to Sir Richard Webster's Insurance of Children Bill, in which the writer regrets its withdrawal—a regret which we are sure all our readers will share. If that mysterious entity "the feeling of the country" is not ready to accept Sir Richard Webster's Bill, it surely would accept one for forbidding the insurance of illegitimate children; for it is to everyone's interest that these should be got out of the way, and every medical man whose practice lies among a certain class knows perfectly well that the "removal" is effected and how it is done. Dr. Stephen Mackenzie contributes an interesting and useful paper upon a very distressing and common condition—namely, Flatulence. Mr. Victor Horsley gives five cases of Operation in Leontiasis Ossium, and Mr. Walter Jessop writes on Ocular Headache. Dr. Fletcher Beach continues his paper upon Feeble-minded Children, and there is a good article upon Waters and Baths for the Gouty.

Chapman's Magazine.—When a magazine starts as well as Chapman's did there is always an idea that the first standard of excellence will not be kept up, but of this there is no sign. Mrs. Andrew Dean contributes a clever sketch of some singularly disagreeable people, and Mr. Crockett describes a vision of fiends equal to that appalling one of the pig demons under the gallows reported by Dr. F. G. Lee, and they were the *premier cru* of bogeydom. However, no doubt the visions were due in both cases to some error of refraction accentuated by dyspepsia. Mr. Bret Harte's serial gives a life-like picture of "road agents" and their doings, and Miss Violet Hunt continues to evolve in her admirable manner the character and little ways of Mrs. Munday, as fascinating a woman as Becky Sharpe. We are sorry to see there is one blemish in the shape of an in-set advertisement.

The Contemporary Review.—Professor Lombroso writes on Atavism and Evolution, showing how a return to primitive ways may be coexistent with the most modern developments. Mr. Herbert Spencer contributes a paper on Dancers and Musicians, where, in speaking of religious dances, he quotes an instance of Christian religious dancing "in a remote region" among the Pueblos. He might have quoted an instance much nearer home—namely, the solemn dance before the high altar at Seville (we think the town is) on the festival of Corpus Christi. Mr. Charles Roberts contributes an interesting paper on the Physiology of Recreation, and Mr. A. W. Hutton writes an earnest plea for a national opera house. This last, though an excellent idea, we fear, would fail if not very carefully organised. The Albert Hall, the only musical institution in any way connected with the State that we have, is a disastrous failure from a musical point of view, excepting as regards the Royal Choral Society.

The Scientific Roll and Magazine of Systematised Notes: Climate—Baric Condition. Conducted by ALEXANDER RAMSAY. Nos. 1 to 6. London: The Castle Printing and Publishing Company, Elephant-road, Elephant and Castle. 1894.—Temperature, rainfall, sunshine, and the prevailing directions of the wind are the principal atmospheric conditions taken into account in the investigation of existing diseases or in the selection of health resorts. To an important section of the community, however, sea voyagers, and the shipping interest in particular, the barometric movements are of at least equal consequence, and it is this branch of meteorology which Mr. Ramsay has taken up in the volume now issued in serial form. In subsequent volumes he contemplates dealing with the questions of carbonic acid and chemical rays, dust haze, electrical condition, &c. In an essay introductory to the present work he discusses the cause of the rise and fall of the barometer, arguing that it cannot be directly accounted for by variations in temperature and aqueous vapour, but suggesting that when currents of air are set up by differences of temperature and dew-point they meet with unequal resistance. In consequence of its elasticity the air may be held back when flowing over a surface presenting more than usual friction, and, at the same time, will flow rapidly over the smoother tracts. More air, therefore, flows in one direction than in another, and in proportion as the weights of the incoming and outgoing columns of air differ so the barometer rises and falls. He then gives a *résumé* of the barometric observations of various eminent meteorologists and their comments thereon as recorded up to the year 1845.

The *Twentieth Century* has an appreciative article by Karl Blind upon Jacob Moleschott, the eminent physiologist of Heidelberg. The article deals mostly with the political side of Moleschott's career, as might be expected from its author. Moleschott and his successor Huxley had many things in common, both as to their work and the way it was received,

and both, to use Moleschott's words, tried "to describe in clear, easily understandable language the incessant course of the elements throughout the animal and vegetable world." There is an interesting paper on the Dawn of the Railway Era. The necessary characteristics for an engine-driver in 1841 were "that he should not be deaf, shortsighted, or subject to fits, and should be of affable manners, so that in the event of an accident he might prevent dissatisfaction among the passengers by his intelligent conversation." Even though testing for colour blindness and acuteness of vision is not made compulsory by the Board of Trade, it must be admitted that the standard of qualification for driving an engine has been raised since 1841. There is an essay by George Morley on George Eliot's country, and Mr. William Graham tells the story of the Byron separation.

The Westminster Review.—The first article in this magazine has a melancholy interest at the present time. Apart from the metaphysical subjects of which it treats, it deals with the late Professor Huxley's views on Hume and Berkeley written by a "humble disciple," Mr. G. G. Greenwood. The paper entitled the "Mystery of the Pacific" treats of Easter Island and the Atlantic tradition. An Irish Protestant has a really admirable paper on Education in Ireland, showing the manifest superiority of Roman Catholic education in Ireland. Anyone who has read the Stonyhurst manuals will agree with the writer that the Jesuits are admirable teachers.

The Humanitarian.—There is an interesting article by Mr. R. H. Sherard, "An Interview with Daudet," who mentions amongst other matters the great increase of drunkenness in France owing to the ruin of the vineyards, so that instead of the light wholesome natural wines, the people are compelled to use artificial wines, absinthe, &c. The Rev. W. J. Wood has a sensible article on the purity question and the avoidance of syphilis.

Analytical Records
FROM
THE LANCET LABORATORY.

"LIQUEUR ADVOCAAT."

(SIMUNDT, SLATER, AND CO., 2, GUILDHALL-CHAMBERS, BASINGHALL-STREET, E.C.)

ALTHOUGH only recently introduced into this country by the above firm, who are the original manufacturers, this "liqueur" appears to be well known on the Continent. Its formula is certainly not new, since it is composed of yelks of eggs with a blending of certain choice liqueurs and mature brandies. In the present preparation, however, the combination of these ingredients has been very satisfactorily effected. The taste is delicately and agreeably aromatic and its consistence uniform. Such a mixture is, of course, well known as a vigorous restorative, and scientifically it is a distinct advance on liqueurs, which are mostly and simply composed of syrup, spirit, and flavouring.

VINOLIA SOAPS.

(BLONDEAU ET CIE: LONDON DEPÔT, RYLAND-ROAD, N.W.)

No less than twelve varieties of this well-known soap have been submitted to us for examination, and it is sufficient for us to record, as affording evidence of their economic value and admirably balanced composition, that in the analyses we made the moisture was found to range from, in one instance, as low as 4·66 per cent. to 7·44 per cent., the mean of the total number examined being 6·20 per cent.; alkali in combination with fat ranged from 8·23 per cent. to 10·60 per cent., the mean of the total examined being 9·70 per cent. soda (Na_2O); free alkali was not found in any single instance. These, as well as other satisfactory indications obtained on testing—as, for instance, the freedom from foreign substances sometimes, but unjustifiably, used in the preparation of soaps—are such as to satisfy both requirements of a soap intended for toilet purposes—i.e., being emollient as well as cleansing. The delicate fragrance of these soaps enhances their attractiveness.

ANTISEPTIC MOUTH PEARLS.

(S. RADLAUER'S KRONEN-APOTHEKE, 160, FRIEDRICHSSTRASSE, BERLIN, W.)

These pills, containing thymol, saccharin, menthol, eucalyptol, vanillin, and volatile oil, afford a convenient, portable, and effective form of mouth wash. Though, as will be seen from their composition, they must possess very distinct antiseptic properties, yet they are not likely to be injurious; in addition, their taste is agreeable rather than the contrary. They supply an important requisite.

DRY ANTI-DIPHTHERITIC SERUM.

(BURROUGHS, WELLCOME, AND CO., SNOW-HILL-BUILDINGS, E.C.)

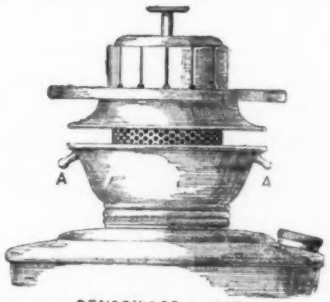
We have received from Messrs. Burroughs, Wellcome, and Co. a specimen of dry anti-diphtheritic serum in the form of fine golden scales, which they claim they were the first to prepare. The dried serum is freely soluble in about twice its volume of cold water. One gramme contained in a glass tube represents ten cubic centimetres of the normal liquid anti-diphtheritic serum, and it is stated that to obtain the full potency of carefully prepared liquid serum it is merely necessary to dissolve the contents of the tube in this quantity of cool but previously boiled water. We cannot speak here as to its therapeutic activity (which, however, is guaranteed by the makers), but the convenience of this preparation is obvious; while the fact that in the dry state the serum is permanent is a very important additional advantage. The sample is labeled with the date of preparation, the number of the horse from which the serum was derived, and the degree of immunity it possesses, all of which are attested by the signature of the medical director in charge of the biological laboratory.

New Inventions.

THE BENSON-LEE SAFETY LAMP CONSTRUCTED WITH CARBON BURNER.

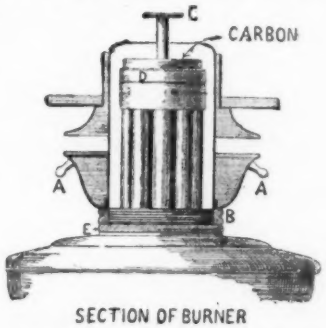
IN seeking to overcome one objection it occasionally happens that more than one improvement is effected, and this would appear to be the case in regard to the Benson-Lee lamp. Primarily the object of the invention was probably only to improve upon the wick by substituting for the cotton wick a more or less solid wick of some porous and indestructible material, which would not require trimming or levelling or adjusting in any way. Not only have the inventors, we find, succeeded in the present instance in carrying this out, but by the introduction of a collar of gas carbon, which was subsequently chosen to replace the ordinary cotton wick, the burning of oil of comparatively low flashing-point, like the petroleum at present supplied for lighting purposes, is made quite safe, without its lighting efficiency being in the least degree affected. We find, for instance, that on tilting the lighted lamp through a right angle or by turning it completely upside down the light is immediately extinguished and not a drop of oil is spilt. It would appear, therefore, that the hard gas carbon wick affords an efficient barrier against the ignition of the oil in the reservoir, besides which, by means of an arrangement which allows air freely to play round the tubes containing the small cotton wicks supplying the carbon burner with oil, the latter is kept comparatively cool. As will be seen from the accompanying illustration, the wick is compound—that is, it consists first of a series of small cotton wicks enclosed in the small tubes comprising the centre column of the burner. These convey the oil to the carbon wick or burner, so that on its way it passes over a large cooling surface before it reaches the flame. The size

of the flame is not regulated by moving the wick up or down, but by controlling the air-supply, which enters just above the points A A, which are the knobs for screwing the lower cup, to which they are attached, right up to the top if necessary, and so stopping the air-supply altogether and extinguishing the flame. The lamp gives a white, steady, and brilliant flame, which never presents an unsightly or



BENSON-LEE LAMP

uneven appearance, because the wick always keeps the same level and never requires trimming. Apart from the very important advantage of the security which this device affords against explosion or ignition of the oil, it is obviously an improvement which those who know the inconvenience and trouble of keeping wicks constantly trimmed, and the nuisance caused by detached and half-consumed pieces of wick getting into the fittings, will thoroughly welcome. Indeed, it removes not a few of the strongest drawbacks to the system of lighting by oil; the wick cannot get out of



SECTION OF BURNER

order, objectionable smells are consequently avoided, while from the fact that it fits perfectly the burner tube it affords an effectual precaution against accidents arising either from the spilling of the oil or the ignition of the vapour in the reservoir. The "life" of the "carbons," which may easily be replaced, is said to be from two to four months. New carbons take some time before they give the maximum light, until, in fact, they are saturated with oil and the oil is travelling freely through them. Messrs. W. A. Benson and Co., 82, New Bond-street, are the makers.

ASEPTIC CATHETERS.

MESSRS. MAW, SON, AND THOMPSON have introduced at my suggestion an alteration in the manufacture of flexible catheters which I believe to be an improvement of considerable value. A great deal of attention has been paid to the outer surface of catheters, to the shape and position of the eye, to the neck, and to the end beyond the eye; the interior, the part that comes into closest contact with the urine, has not been touched. It is left rough, irregular and uneven, with in some instruments the fabric exposed so that the urine can cling to it and even soak into it. Proper cleansing without elaborate appliances and unlimited leisure is almost impossible. Anyone who will split open an old catheter, one that has been in use for some time, and will inspect the interior will see at once what I mean. The new ones that Messrs. Maw, Son, and Thompson have made for me are as highly polished and as finished upon the inner surface as they are upon the outer. They can be cleansed and rendered aseptic with the greatest ease. There is no need for any elaborate apparatus. If they are placed at once, after having been used, end upwards in a deep bottle filled with a solution of boracic acid, every trace of urine is expelled immediately and replaced by the antiseptic, and the instrument is fit for use again. It is not possible for an old man with enlargement of the prostate who has to pass an instrument many times in the twenty-four hours and often at night to cleanse an ordinary catheter effectually. With these there is no difficulty. They can be rendered aseptic at once and in a manner so simple that the most ignorant cannot make a mistake.

Wimpole-street, W. C. MANSELL MOULLIN.

SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE annual general meeting of this society was held at 429, Strand on June 28th.

Mr. Joseph Smith was elected President for the year, Mr. George Brown honorary treasurer, and Mr. W. G. Dickinson (Southfields, S.W.) hon. secretary.

The Secretary reported the correspondence between the committee of the society and the Home Office in connexion with the recent amendment of the by-laws of the College, the result of which met with the approval of the meeting.

The following resolution was proposed by Mr. Nelson Hardy, seconded by Dr. Thos. Morton, and carried unanimously: "That this meeting is of opinion that the time has come when active steps should be taken to secure for Members of the Royal College of Surgeons of England their due share in its management, in accordance with the request of nearly 5000 Members contained in the petition to the Privy Council in the year 1887."

The honorary secretary will be glad to receive the names of any Members of the College wishing to join the society. The annual subscription is 2*s.* 6*d.*

ROYAL MEDICAL BENEVOLENT COLLEGE.

THE foundation stone of the New Lower School will be laid by His Royal Highness the Prince of Wales, K.G., at 3 P.M., on Monday next, July 8th. Tickets of admission to witness the ceremony, which will be issued in priority of application, can be obtained by letter from the Secretary, at the Office, 37, Soho-square; or of the Bursar, at the College, Epsom. H.R.H. the Princess of Wales has graciously announced her intention of being present.

A special train will leave Victoria Station at 1 P.M., calling at Clapham Junction, Mitcham Junction, and Sutton Station, and leaving the Downs Station for the return journey about 5 P.M. Return tickets from London, which must be taken at Victoria Station, will be issued at three shillings. It is requested that those applying for tickets will give notice if they will travel by the special train. The return tickets will be available by the ordinary trains of the London, Brighton, and South Coast Railway at the Downs or Epsom Town Stations.

It is hoped that as many members of the profession as possible will attend the ceremony out of compliment to their Royal Highnesses the Prince and Princess of Wales, no less than out of a due sense of the excellent work that has been done by the authorities of the institution. And while writing of this work it will not be out of place to call attention to the fact that an election by the Council of the College to a scholarship, giving free education and maintenance at the School of St. Anne's Society will shortly take place. Candidates must be between the ages of seven and twelve, and must be necessitous orphan daughters of duly qualified medical men who have been for not less than five years in independent practice in England or Wales. Forms of application can be obtained at the office, and applications must reach the secretary not later than the morning of July 16th.

THE LANCET.

LONDON: SATURDAY, JULY 6, 1895.

THE time is approaching when the claims of the Members of the Royal College of Surgeons of England to a share in the government of the institution must receive the careful consideration of the Council of the College. There can be very little doubt that there is among the Fellows of the College a growing feeling in favour of some concessions being made by the Council to its immense constituency of Members. Strange as it may seem to all who are acquainted with the elementary facts concerning the constitution of the College, we do not hesitate to assert that one of the main causes of denial of due recognition to the Members has been ignorance of the actual position of the Members of the College as an integral part of the "body politic and corporate of the said College." More than once have we heard Fellows of the College asseverating that the Members of the College have no more right to consideration than the Licentiates of other corporations—the Royal College of Physicians, for instance. When this ignorance is liable to be carried even into the council chamber of the College, how can it be expected that the claims of the Members can advance very speedily to a favourable solution? In the hope that this may meet the eye of Fellows who still entertain an erroneous view of the position of the Members in the constitution of the College we will quote a paragraph from the Charter of March 18th, 1852.

"Whereas the body politic and corporate of the said College at present consists of persons created Members of the said College by the said first-mentioned charter, or constituted such Members by letters testimonial under the common seal of the said College, of the respective qualifications of such persons to practise the art and science of surgery, and also of persons created Fellows of the said College under the provisions of our said letters patent, and elected and declared to be Fellows of the said College by one general diploma under the seal of the said College, enrolled in our High Court of Chancery, and also of other persons appointed under the powers of our said letters patent by the Council of the said College, to be Fellows of the said College by diplomas under the seal of the said College, and also of other persons who, after having attained the age of twenty-five years and complied with the rules and regulations directed by the bye-laws of the said College, and having passed a special examination by the examiners of the said College, have been admitted Fellows by diplomas under the seal of the said College." In short, "the body politic and corporate" of the Royal College of Surgeons of England consists of the Members of the College and the Fellows of the College. Licentiates of the other licensing corporations do not belong to the corporate bodies.

It is this fundamental fact that the Members of the College are a part of "the body politic and corporate" of the College that forms the basis of the claims of the Members to a share in the government of the institution. The claims are upheld by many considerations, amongst which the most cogent is that the College derives its main pecuniary support from the fees of candidates for the Membership, for those who do not admit that the maxim that taxation and representation should go together is applicable to the case of the Members must acknowledge that it would be for the good of the College that the Members of the College should be interested in its welfare and not alienated by exclusion and repression. Hence it is that many Fellows are, we have good reason to believe, anxious that some concessions should be made to the Members, and that, without derogation from the position of the Fellows, the Members should be allowed to participate in some degree in the Government of the College. The progress of these opinions amongst the Fellows of the College is specially gratifying to THE LANCET, which has from the earliest period upheld the claims of the Members as deserving of far more consideration than they have ever yet received, and at an early date we hope to recur to the subject, and to point out how the legitimate aspirations of the Members may be satisfied with advantage alike to the Members, the Fellows, and the Council. During the progress of an election of representatives of the Fellows to serve on the Council of the College it is almost impossible for those who sympathise with the Members in their desire for an adequate share in the management of the College with a view to increasing the influence of the institution to do much to advance the cause. Now, however, that the election is over we trust that the importance to the College and to the profession of uniting the whole constituency in harmonious relationship will receive the attention which it undoubtedly demands at the hands of all loyal scions of this the greatest of all our professional institutions.

THE subject-matter of the paper which Dr. THIN contributes to our columns to-day is a forcible reminder of the invaluable services which the microscope is rendering to medical science. He does well to place in the forefront the remarkable fact that the most striking discoveries which have been made by means of this instrument are those which have demonstrated the existence of parasitism as the etiological factor in important group of diseases. The three examples which he specially cites—tuberculosis, leprosy, and malaria—are in themselves accountable for so large an amount of disease and premature death that the discovery in them of the causal agent would alone make the latter half of the century memorable in the history of medicine. But when to those are added septic diseases, anthrax, glanders, actinomycosis, relapsing fever, diphtheria, and enteric fever, besides other affections in which the evidence of parasitism is less crucial, the additions made to knowledge and the gain in insight into the causes of disordered function during a comparatively brief period are so vast as to amount to the opening of an entirely new chapter in that history. The subject upon which Dr. THIN especially dwells is one of the most interesting and important of them all. For in the first place the class

of parasites which LAVERAN discovered in malaria is wholly different from that revealed in connexion with other diseases; and in the second place, the seat of operation of the invading host is quite special and peculiar. For the malaria parasite is of animal nature, belonging to the lowest forms of protozoal life, and its particular object of attack is the red corpuscle of the blood, the destruction of which goes far to account for the phenomena of malarial fevers and their sequelæ. Not that LAVERAN'S parasite stands alone amongst hæmatozoa, but rather that those other parasites which make the blood their habitat—e.g., the filaria sanguinis hominis—are quite different from the malaria organism in their action, just as they differ in their position in the zoological scale. Indeed, with the exception of this one, human hæmatozoa are not in the strict sense blood parasites. They inhabit the blood, and are conveyed in its stream or impart to it toxic properties; but they do not, as the malaria organism does, fasten themselves on the formed elements and live at their expense. Remarkable as this property may be, it has its counterpart in the lower animals, for parasites, very analogous in type and in mode of attack, have been discovered in the blood corpuscles of frogs and of certain reptiles and birds, and have been termed "drepanidia." The progress of research into the malaria organism, as sketched by Dr. THIN—and later carried on by GOLGI, MANNABERG, MARCHIAFAVA, BIGNAMI, and others,—has considerably extended our knowledge of the developmental changes of the parasite and of the various forms associated with different types of malarial fever. It has been shown that the character of the fever—the clinical type to which it conforms—is related to the length of time taken by the parasite to develop in the blood corpuscle, assimilate its colouring matter, and eventually break up into "spores" the dissemination of which coincides with each pyrexial paroxysm. Thus in the quartan type—as GOLGI showed—the parasite may be seen to grow within the blood corpuscle, and at the end of sixty hours, or twelve hours before the next attack, to almost entirely fill it; then it begins to subdivide, and in six hours more to get free from the investing sheath, the last relic of the destroyed corpuscle, and appears as a congeries of radial bodies ranged around a mass of pigment, the final separation into free "spores" occurring at the close of the apyrexial interval. The tertian parasite goes through its evolution in a proportionately shorter space of time—forty-eight hours—and the quotidian in only twenty-four. There are varieties of form as well as variations in the rate of growth, and a special form has been described as characterising the pernicious types of fever. It would be too much to say that all lacunæ in our knowledge of the life-history of these organisms have yet been filled; but it is at least surprising how much has been established, thanks to the patient work of microscopists. One great discovery yet remains to be made, and that is the demonstration of the parasite outside the body and the route whereby it gains access to the blood. We infer that it must be in soil or water, but its presence therein has not been proved. This link in the chain is also wanting in the case of the sporidia which have been alluded to as attacking the blood corpuscles of certain other vertebrates.

One great merit of Dr. THIN'S paper lies in the careful details he gives to enable others to detect these minute organisms in the blood of malarial subjects. Himself a skilled microscopist and fully aware of the importance of attention to the smallest detail in a research so delicate as this, he has placed it within the power of all engaged in the task of dealing with these formidable fevers to add largely to their diagnostic appliances. The carefully executed coloured drawing which accompanies his paper will be of further assistance as enabling such medical officers to recognise the characters of these organisms. He shows, too, that this microscopical work has a direct practical value, for when the diagnosis of the true nature of the attack of "fever" is thereby placed beyond dispute there can be no hesitation as to the course of treatment to be followed. Not the least interesting fruit of LAVERAN'S discovery has been the demonstration that the efficacy of quinine lies in its parasiticidal property. Thus does science give proof of the direct action of a remedy long known and prescribed on purely empirical grounds, whilst at the same time it demonstrates the limits within which such remedial action alone can operate.

IF charity ever should fail in reference to our voluntary hospitals it will be largely due to the faults of their administration, and especially to that of the out-patient department. We insert to-day an interesting letter from a clergyman on one crying evil of the out-patient system—the delay and detention of patients. Our columns, as is well known, are reserved chiefly for the use of members of our own profession; but this is a point and the present is a time at which the clergy have a good right to a special hearing. They have just been making a collection in their various churches, forgetting all distinctions of creed, and so supplying a much-appreciated contribution to the maintenance of our hospital system. "That other church—the hospital," was the eloquent and happy expression of a deep truth which we owe to one minister of the Gospel on the recent Hospital Sunday. We have much pleasure, therefore, in finding room for the letter of one of a class to whom our hospitals owe so much, and who, it will be admitted, owe much to our hospitals. A clergyman in one of our poorer parishes without facilities for securing the medical treatment of the poor whom he visits, and especially their admission, in urgent circumstances, to a hospital, would feel deprived of one of his chief pleasures. We recognise the force of the objection of our clerical correspondent to a system which "keeps many delicate invalids in the melancholy waiting-room for four, six, or even eight hours, waiting the convenience of physicians, surgeons, and apothecaries." We have no hesitation in admitting—indeed, we have often pointed out—that such a system "is a cause of intense mental, and not infrequently physical, suffering to the patients." The case is aggravated in those who have come a distance or have to give up a day's work to attend the hospital. Our correspondent thinks this evil so obvious and so great that he is at a loss to understand how it is allowed to go on without any efficient attempt to remedy it. He is so puzzled at the want of reform in this direction as to have come to rather an uncharitable theory for one of his

profession—namely, "that the physicians and surgeons are in league to resent the smallest interference," and that the governors or secretaries will not attend to details so minor in their estimation.

We agree almost entirely with our correspondent as to the evil and as to the propriety of finding a remedy for it. But we scarcely agree with him as to the causes of the evil and the remedies it requires. There is one class of persons who are grievously to blame for the crowded state of the out-patient department and for the irksome detention of patients in pain, and that is the out-patients themselves, or rather that large section of them who have no business to be out-patients at all. It is undeniable that thousands of them could get all the medical attention they need without detention at the house of a private practitioner, and for the payment of sums that are quite within their reach. This mode of procedure on their part would have the enormous advantage of bringing them and their families into medical contact with a practitioner of their neighbourhood, who would have some chance of becoming acquainted with their constitution and circumstances, and would acquire a human interest in their health and well-being. In the out-patient department they are mere units in a crowd. We need not say, too, that this large section of the frequenters of the out-patient department are not fit objects of charity. They are unfit, and the suspicion that they absorb the funds supplied by the charitable is a part of the explanation of the inadequate support of hospitals which we all lament. The clergy can do no greater service to the really fit cases for the out-patient department than by exerting their influence to deter others from using institutions which were never meant for them. But though we are of opinion that the number of cases of suffering from prolonged detention in the out-patient department mentioned by our correspondent would be much diminished by respectable people of the working classes and smaller tradespeople recognising that the out-patient room is no place for them, and being in fact rather ashamed to be seen there, we by no means entirely acquit the "governors and secretaries" of all blame for the abuses which everybody sees and by which it is calculated that one-fourth, or even one-third, of the metropolitan population comes into contact with the hospital system every year. The governors and secretaries are very much misrepresented if they do not connive at these abuses. Do they not parade these bloated numbers in their reports as facts to be proud of, as the basis for a still larger subscription list? Our sympathetic interest in hospitals is great and ever increasing. But this shall never prevent us from demanding that the out-patient department shall be reformed for various and important reasons, of which to-day we emphasise one—that those persons whose cases are grave and sad may have prompt attention from skilled officers, agreeing, as we do, with the Vicar of St. Philip's, Sydenham, that under present conditions such cases are often made grievously worse by prolonged attendance in the waiting-room.

WITH the death of Professor HUXLEY there passes away a man of robust mind and great intellectual power and intrepidity, an original and independent thinker, and a master of vigorous, masculine English, as well as a man of very wide range of thought, varied attainments, and rare learning. He was one of the most conspicuous figures of the latter half of this century in science, literature, philosophy, metaphysics, and education. Any contribution bearing his name was always read with avidity, because he wrote both vigorously and tersely, was singularly happy in his use of illustrations, with the additional charm of touches here and there of wit and humour and an occasional dash of poetry and pathos that afforded glimpses of the broad sympathies and pitifulness of his deeper nature. Apart from the scientific work he had accomplished, and the reputation he had won from the special jury of science, these qualities, and the generous, enlightened, and fearless character of his writings, made him a leader of popular thought and a reformer of popular misconceptions. As a strong swimmer, confident in his own powers, plunges into the stream and finds a pleasurable exercise in breasting the tide, so did HUXLEY love to sound the depths and encounter the difficulties of a controversial or abstruse subject. Some writers, like the late JOHN STUART MILL, have dwelt upon the mergence of individual character in a dead level of uniformity as the bane of modern civilisation: the manly independence and intellectual force and honesty of men like HUXLEY provide the best antidote. That he was regarded by some as too assertive and aggressively dogmatic in the expression of his views is of little importance now. Who cares to regard these things in recollecting the nobility of the man, his honesty and hatred of cant, his pride that preserved him from all mean and sordid motives, his manly sympathies with the sufferings of humanity, and his courage in following without wavering, or shadow of turning, what he conscientiously thought to be the light of truth and reason? Nature had endowed him with great gifts, and he bestowed them on his fellow-man with an open palm. On his sacrifices and laborious exertions in the cause of science, and on the bold and striking generalisations and the achievements he accomplished in that field, there is no need to dwell here, for these have been universally recognised by his friends and foes alike. As an educational lecturer he was admirable; his scientific knowledge and tone were as conspicuous as was his easy and lucid exposition, and, as we have said, his use of illustrations was always specially happy in that they really did illustrate what he was elucidating or describing. His writings are models in their way, so transparently clear that the reader can see to the bottom of the deepest subject, because their author had himself penetrated those depths and previously examined and ascertained the meaning underlying the phenomena he was describing. Not only had HUXLEY genius, but he had cultivated nature's rich soil with rare assiduity; he was an excellent classic, a modern linguist, a draughtsman, and a highly cultured man. And it may be confidently asserted that he exercised his powers with a dominating love of truth for its own sake, and an abiding sense of responsibility. As he has himself told us, he held the conviction that there was no alleviation for the sufferings of mankind except veracity of thought and action. It was this conviction that made him try to promote the increase of natural knowledge and encourage the application of scientific methods of investigation to all the problems of life. We

need scarcely dwell upon the fact that the medical profession may recall with pride that it had the great honour of numbering the late Professor HUXLEY among its members, and that he began his career and first made his mark whilst serving in the Royal Navy. But HUXLEY belonged to his generation and mankind. The news about a change of Government and a pending election, and the list of titular honours and distinctions conferred by the outgoing Government, which appeared in the papers contemporaneously with an obituary notice of the Right Honourable T. H. HUXLEY, will be obliterated from the memory like a last year's almanack, but his name will always remain on the scroll of fame of the Victorian age.

Annotations.

"Ne quid nimis."

THE METROPOLITAN PROVIDENT MEDICAL ASSOCIATION.

THE annual conference of gentlemen interested in this Association took place on the 21st ult. at the house of Mr. Claude Montefiore, 12, Portman-square, and included Mr. Gerald Balfour, M.P. (who presided), Lord Battersea, Sir Spencer Wells, Mr. T. Holmes, and others. It is impossible not to recognise the good motives of the gentlemen who constitute the executive of these dispensaries, and the amount of time and trouble they expend over the dispensaries. The provident principle has long been recognised by the medical profession. It is the essence of the club system which in an unostentatious way has been of immense service to the working-classes. It is difficult to say how a large section of these classes could be attended without some such adaptation to their means, though it is undeniable that not a few workingmen have their own medical adviser for themselves and their families, and contrive to pay him two or three pounds a year, which the medical man appreciates as much as twenty or thirty from his richer patients. The sum is easily raised in a respectable family in these days when so many steady branches of employment are open to its various members. The Metropolitan Provident Medical Association has for its main object what every one must approve—the prevention of the abuse of hospitals. Its promoters are never weary in exposing this abuse and in trying to establish a system of friendly coöperation between hospitals and provident dispensaries, by which members of the latter institutions shall be favourably considered when their cases are grave enough to need the accommodation of a hospital. They have established twelve dispensaries in the metropolis, about half of which are self-supporting. The others need to be subsidised from the central fund, and receive help, like other dispensaries, from the Hospital Sunday Fund and the Hospital Saturday Fund. It cannot be said that this experiment has been a success. The medical men are poorly paid, the dispensaries without extraneous help would break down, and the hospitals are not materially relieved of work. In other words, the easy terms of the dispensaries and their general arrangements are not such as to attract the thousands who crowd the out-patient departments of our hospitals. The cause is not far to seek. At the hospitals medical work is given away, and the patients know that as a rule they will receive the advice of practitioners of the consultant class. Neither have these dispensaries succeeded in attracting the medical profession, whose members have regarded them with some suspicion. The reasons of this are not difficult to discover, and may be thus stated. The dispensaries compete with private practitioners; there seems no strict enforcement of wage limits; small handbills are printed which are apt to get into circulation, and that among the patients of other medical men; and those gentlemen who do join them are not rewarded by any adequate compensation for the work done. We should be glad to see some escape from these faults in institutions which have a provident basis. If the authorities of hospitals would do their duty and repress the crowds which throng their out-patient departments, the promoters of these dispensaries might be able to offer both the patients and the practitioners who attend them better terms. Meantime, it is enough to say that they are more in favour with laymen of a certain economic cast than with members of the medical profession. Like too many other medical institutions, they are worked at the expense of the medical profession and for the benefit of classes who can make a better recompense to their medical attendants than is provided for in the tariff of these dispensaries.

HOW DO PLANTS OBTAIN THEIR NITROGEN?

NOT the least remarkable part of the knowledge that we have gained during the last few years has been our insight into the life processes of plants, especially as regards their manner of assimilating nitrogen, admirably summed up by Professor H. Marshall Ward, F.R.S., in the current number of *Science Progress*. The mere narration of the details of the struggle with nature for the possession of this momentous secret is as exciting as the record of the discovery of the North-West Passage. After Sachs had determined the function of chlorophyll in splitting up the carbonic acid of the air into carbon and oxygen by means of the sun's radial energy, the question of the supply of nitrogen to plants came into prominence. As the leaves of the plant are bathed in an atmosphere of nitrogen, it was supposed first of all that the nitrogen was obtained from the air, but a crucial experiment of Lawes and Gilbert with different varieties of agricultural plants seemed to disprove this. The experiments, indeed, made it perfectly clear that a green plant was unable of its own accord to fix the nitrogen of the air. The only other sources of nitrogen are the nitrates derived from animal excretions, the decomposition of animal and vegetable tissues, and the nitric and nitrous acids produced by electrical discharges in the atmosphere. Nitrates are exceedingly soluble in water and are rapidly removed from the land by surface drainage, so that these sources seem hardly sufficient to account for all the nitrogen used by the vegetable world. In this dilemma a fresh path was opened to the investigators by the progress of bacteriology on the one hand, and of researches into the functions of the roots and root hairs on the other. In a thimbleful of soil there are present from one to ten millions of minute organisms in more or less close contact with the rootlets of the plant. The mode of life of these bacteroids in relation to the plant was a fertile subject for investigation. There are present, of course, a certain number of merely destructive organisms, and a further cohort of nitrifying and de-nitrifying germs, but what of the others? Their function was not fully understood until 1887, when Professor Marshall Ward found that the soil contained a perfectly definite living organism that invades the tissues of leguminous plants, causing fleshy nodules to form on the rootlets. Further investigations by a number of observers since that time have elucidated the curious relations that exist between the plant and the bacteria of the soil. It appears that the organism, having entered the root hairs, stimulates the deep cells of the cortical tissues to form a layer

of hypertrophied cells. These cells are filled as fast as they are formed with quantities of bacteria, which do not injure the cells, but stimulate them to intense physiological action. During this time large quantities of carbohydrates are taken from the plant and converted into carbonic acid, the energy thus obtained being used to do the necessary chemical work in splitting up the nitrogen molecules obtained from the surrounding air and compelling them to enter into combination. When the activity ceases the partially disorganised contents of the nodule are absorbed by the plant, the shell, together with a few bacteroids that have escaped destruction, being rejected as débris. Leguminous plants seem to be the only ones capable of fixing nitrogen with the assistance of the bacteria of the soil, and a crop of peas or beans adds remarkably to the fertility of a field, so that by a proper succession of crops the farmer will be enabled to dispense to a large extent with nitrogenous manures. By the application of our growing scientific knowledge to practical agriculture there is no reason why our fields should not yield many times their present stores of food to supply the needs of our population and make it worth while again to grow English corn to feed English mouths.

THE GOVERNMENT OF THE WORKHOUSE.

THERE are few things of more importance to the development of our national character than an intelligent application of the Poor-laws. On the one hand, there is a tendency innate in all proper-minded persons to render the lives of their less fortunate brothers as little irksome as is possible under the circumstances; and, on the other, it is obviously expedient to control within moderate limits the practical expression of this spirit of pity and sympathy. In other words, in tempering justice with mercy it is necessary that the tempering process shall be guided by an intelligent estimate of the effects—immediate and remote—which such action is likely to produce. The condition of our workhouses throughout the country may, broadly speaking, be regarded as an index of the interest that is taken by the guardians in the several unions in the practical administration of the Poor-laws, and where we find bad management existing there we shall probably discover either a blameworthy ignorance on the part of the guardians of their duties and powers, or an equally culpable neglect of their responsibilities. The election of guardians held in December of last year was instrumental in introducing into power a large number of persons of varying degrees of education and intelligence, whose experience of Poor-law administration was practically *nil*, and whose knowledge of the duties and responsibilities of their office was in all probability but small. Although the education of these newly elected guardians in at least the recent history of the Poor-law is a matter of paramount importance, it will probably be admitted that some at least of those elected are hardly of the class to master all the complicated technicalities of the Poor-law as contained in the standard works on the subject, even although they are no doubt anxious to obtain a knowledge of their newly acquired duties. Under these circumstances we are glad to be able to welcome a little volume compiled by the editors of the *Poor-law Officers' Journal*, and published at 74, Market-street, Manchester, which contains so much of the General Consolidated Order of 1847 as relates to the workhouse, and also the subsequent Orders and Acts of Parliament dealing with workhouse management. There is, too, in the appendix of the volume the report of the recent Royal Commission on the Aged Poor, so far as it relates to in-door relief and the classification of the inmates; explanatory notes are added where necessary, and the whole forms a compact little volume which should, we think, be of the greatest service to all guardians. We are afraid that in the Poor-law, as also in public health administration by local bodies, there is sometimes too great a tendency to be guided exclusively by the clerk. In the volume to which we are here referring we would especially commend to the notice of guardians those parts having reference to visiting committees. We hear from time to time of scandals in our workhouses and infirmaries which are a disgrace, not so much to our Poor-law system, as some would infer, but to the guardians who fail to act up to the responsibilities which they have incurred. If the visiting committees, which, we are told, are usually appointed at the commencement of each financial year in accordance with the provisions of Article 148 of the General Consolidated Order, would do their duty and "carefully examine the workhouse once in every week at the least, examine the stores, and afford, so far as is practicable, to the inmates an opportunity of making complaints," and, in addition to this, from time to time make surprise visits, we venture to think that scandals, of which we too often hear, would diminish in number.

THE MILK-SUPPLY OF NEWCASTLE-UPON-TYNE.

DR. HENRY ARMSTRONG has recently presented to the Newcastle Sanitary Committee an interesting report upon this subject. Newcastle, we are told, consumes nearly 2,000,000 gallons of milk annually, part of which is produced by cows located in the city and its vicinity, and part imported by rail or steam-boat. Dr. Armstrong reports that, as a rule, the milk houses and milk vessels on dairy farms are kept "scrupulously clean and sweet," a condition of affairs which, we must confess, does not always obtain in southern England. Considerable progress has been made in Newcastle in the matter of cowhouses in recent years, and since July, 1892, when regulations under the Dairies, Cow-sheds, and Milk-shops Order were made, no less than thirty-nine cow-houses have been pulled down or closed. Under the regulations in question 800 cubic feet of space are prescribed for each cow, but there seems to be some difficulty in enforcing this amount, and we are told that this part of the regulations has not yet been put in force; in fact, from the 800 cubic feet standpoint 65 per cent. of the cowhouses are overcrowded, and Dr. Armstrong draws attention to the danger to the health of the cows of such overcrowding. There are in the borough no less than 488 places for the sale of milk by retail, but many of these are not, Dr. Armstrong states, suitable for the purposes of milk storage, and he draws attention to the difficulty of properly controlling persons who hawk about the streets milk taken from railway cans temporarily lodged in their premises, but who do not use these premises as sale shops. In that part of his report which deals with milk in relation to disease in cattle and in man Dr. Armstrong points out that different diseases of cows are transmissible by means of the milk to the persons who consume it, and that milk serves as a nidus for the development of the germs of the disease, both "before and after yield." In the matter of tuberculosis reference is naturally made to the recent report of the Royal Commission, and Dr. Armstrong remarks, we notice, that "the milk of cows with tuberculosis of the udder is much more virulent than that of animals affected with the disease in other parts only." It would seem, however, that in the opinion of the Commission, milk drawn from tuberculous cows whose udders were unaffected by the disease, was not at all potent for harm—for instance, in Paragraph 60 the Commissioners state: "According to our experience, then, the condition required for ensuring to the milk of tuberculous cows the ability to produce tuberculosis in the consumers of their milk is *tuberculous disease of the cow affecting the udder*." (The italics are theirs.) The Newcastle Improvement Act of 1892 enacts that no dairyman shall sell the milk

of any cow which to his knowledge is affected with tuberculosis or milk fever, and the same Act also provides for the notification by dairymen of the same diseases. These are both excellent provisions, but it appears to us likely that their usefulness may be in some degree impaired by the presence of the words "to his knowledge," which would appear to offer a tempting loophole for escape from the provisions of the Act. With regard to the notification of tuberculosis and milk fever the provision has, it appears, been inoperative, and "no case has been notified." During the last four years an average annual number of 103 samples of milk have been analysed; but, as Dr. Armstrong remarks, this number is altogether inadequate to control a milk-supply of some 2,000,000 gallons, and arrangements have been made for increasing the number in future. In the conclusion of the report suggestions are submitted for the consideration of the committee, and among them we observe "that every cow with tuberculosis (proved or reasonably suspected) on a dairy farm should be slaughtered." No doubt slaughter is a very efficacious method; but perhaps in dealing with a cow only "reasonably suspected" such a proceeding would be a little too drastic, more especially when regard be had to the opinion of the Commission already quoted, and probably the isolation of the cow and the withdrawal of its milk from consumption would suffice. Dr. Armstrong's report should prove of much service to the sanitary committee.

THE DANGERS OF COCAINE.

FEW drugs in recent times have received more general commendation than cocaine; its advantages as a local anæsthetic, received with some incredulity when it was first introduced, have been so abundantly proved that there may be a tendency to overlook the fact that there are certain dangers attendant upon its too frequent or reckless employment. As a local anæsthetic it has won golden opinions where small operations were required upon superficial parts; in ophthalmic and laryngeal surgery it may fairly be said to have revolutionised the methods of a few years back. But every now and again warnings are brought forwards which indicate that with cocaine, as with opium and other modes of producing local or general anæsthesia, there is danger in the familiarity which breeds, if not contempt, at least disregard of ordinary precautions. Verdicts of misadventure are no consolation to those concerned, if there is an underlying conviction that the fatality might never have occurred if there had been any due appreciation of danger. Cocaine is a drug which shares with opium and many others the questionable credit of developing a "habit"—i.e., of leading, by the beneficent effects experienced after small doses, to a desire for the repetition of the relief; and as a consequence the dose employed tends to become greater, and the precautions which, perhaps, were taken at first are gradually relaxed. "Cocainism" is not so well recognised in this country as in America, but it undoubtedly exists as a form of self-indulgence or as a practice which, like morphinism, originally employed as a means of alleviating some chronic trouble, has ultimately developed into a form of self-indulgence, in which the need of restraint and of precautionary measures are entirely lost in the fascination of the relief afforded by the drug. In a recent inquest the evidence showed that the drug had been originally prescribed for the relief of pain in the gums, and the symptoms immediately preceding the termination were merely those of collapse; there was no indication of the amount employed or taken. In most cases collapse is the most marked feature, and this symptom may arise when the drug has been employed as a local application in the form of hypodermic injection or spray, and may frequently call for stimulant treatment after employment of the spray in laryngeal examinations. It must not be forgotten, however, that a true cocaine habit may be developed when the drug is taken internally in any quantity, and that this condition is occasionally marked by curious hallucinations and perversions of moral sense, which, if the use of the drug is not discontinued, may lead to more serious central disturbances. The summary of the whole matter may be expressed in the proverb that "fire is a good servant but a bad master." Cocaine, or any other drug which allays pain, has its limitations, and these are reached when the craving for the relief afforded leads to disregard of the attendant dangers.

ROYAL FREE HOSPITAL: THE OPENING OF THE NEW BUILDINGS.

WE print in another column a letter from Lord Dufferin announcing that the new front building of the Royal Free Hospital will be opened on July 22nd by the Prince and Princess of Wales. The charity thus honoured by Royalty has had a long and useful career, having been founded in 1828 and removed to its present site in Gray's-inn-road during the year 1842. It has no endowment, and, like most of the metropolitan hospitals, is under the necessity of making strenuous and persistent efforts to maintain an equilibrium between income and expenditure. Between 1855 and 1879 the north, south, and east wings were reconstructed, the old front building remaining until 1892, by which time it became so dilapidated that rebuilding was unavoidable. The cost of the new structure, together with a laundry, a modernised drainage system, fire-extinguishing appliances, and other necessary improvements, has been about £30,000, towards which sum the committee have obtained £24,000, thus leaving a balance of £6000 still to be raised. The hospital now contains 160 beds, and the wards are always filled with the most urgent and necessitous cases presenting themselves for admission, no letters of recommendation being required, only the poverty and sickness of the applicants being considered. The committee, therefore, in their need of £6000 make an urgent appeal for aid to the charitable public. In this application they are sustained by the confident assurance that the work which they are conducting under circumstances of so much difficulty, not only benefits the poor and afflicted, but promotes the cause of medical education by the thorough instruction which is here imparted to female students.

FURTHER CONTRIBUTIONS ON HELIUM.

NEW discoveries, however astonishing, soon get left behind by the advancing army of science, like milestones on the road of progress. Scarcely have we overtaken argon and helium when Professor W. Ramsay is promising us not one but two new elements belonging to the same series. According to his paper, read before the Chemical Society on June 20th, there is no doubt that argon and helium contain as a common ingredient a gas not hitherto identified, with a probable atomic weight of about 10 referred to hydrogen as unity; for two lines in the spectra of the newly discovered elements are absolutely identical. From the anomalous position of argon in the periodic scale, Professor Ramsay regards the presence of another element with argon, having an atomic weight of a little more than 20, as almost certain, and, indeed, this would account for many discrepancies. The velocity of sound in helium has been determined, and it has been proved that helium, like argon, is monatomic, and that all its energy is taken up in motion of translation, there being no internal work. It follows from this that the hypothetical element common to the crude helium and argon is also monatomic. The density of helium is about 2·2 as far as we can tell at present, and not 3·9 as wrongly reported previously. When the second

element has been separated from helium its density will be brought down still lower. To clear up a possible misconception we may state that argon has never been obtained from any other source than the air, and that helium has been extracted from various rare minerals by the action of acids. It is impossible for helium to exist in our atmosphere, as the gravitational force of the earth is not able to keep these light atoms, which are thrown off into space by the centrifugal force of the earth's rotation. All the uncombined helium of our planetary system is probably concentrated in the sun, unless that enormous planet Jupiter has managed to retain some. It is interesting to note that helium is by far the most insoluble gas known, for water dissolves only about half as much helium as hydrogen or nitrogen. This will afford a convenient means of separating helium from other gases, and as it seems to be contained in many rare minerals of the uranium and thorium type we may hope that before long larger quantities will be available for the purposes of experiment. Besides the isolation of the two hypothetical gases we have spoken of, Professor Ramsay looks forward to investigating the actual condition in which helium exists in minerals, for he has found that these substances will not reabsorb helium when once it has been extracted from them. The last meeting of the British Association was marked by the discovery of argon, and it is reasonable to hope that the forthcoming session may witness further additions to our knowledge of these remarkable gases.

MENTAL DISORDERS AND BODILY DISEASE.

A PAPER of great interest and suggestiveness by Dr. Goodall and Dr. Bullen on this subject appears in a recent number of the *Journal of Mental Science*, and the particular importance of this subject is at the present time much enhanced by the work recently carried out at the Royal Asylum, Morningside, by Dr. Bruce, with reference to the effect of thyroid treatment on the insane, to which we referred in a leading article in a recent number of THE LANCET.[1] This work was entered upon at a hint, so to speak, derived from the observation of the effect of intercurrent maladies upon mental states. It has long been recognised that in certain feverish conditions morbid mental states undergo a marked improvement, just as epileptic attacks so frequently cease during an acute illness, to recur during convalescence. The administration of thyroid gland substance, especially in doses which are to a certain degree toxic, is now known to be associated with a rise of temperature sometimes of several degrees, and it was thought by Dr. Bruce that by administering this potent substance to patients the subjects of chronic mental disorder, especially the forms in which subnormal temperature is the rule, some approach to the beneficial effect produced on the mental state by acute illness might be looked for. These expectations were not disappointed, and the degree to which they were realised will be found summarised in the leading article to which we have already referred. Dr. Clouston some years ago expressed the opinion that we shall some day be able to inoculate a septic poison and get a safe and manageable counter-irritant and fever by means of which acute attacks of insanity will be cured. This conception, which appeared only a few years ago to be both vague and visionary, may now be said to have entered into the field of practical mental therapeutics. The beneficial effects of an attack of erysipelas in cases of acute insanity and in certain cases of malignant disease are facts which are highly significant, and which seem to convey the suggestion that we have here the mutually destructive effects of one toxic process upon another, and Dr. Goodall and Dr. Bullen in this relation refer to several instances of mental disease in which there has been evidence of the presence of some toxic substance. Thus in a case of acute delirious mania Rasori described a bacillus in the subarachnoid fluid. Bianchi and Piccinino have reported a case of acute delirium in which a bacillus was found in the blood drawn during life, while other observers have made similar observations. Perhaps one of the most interesting points is that two observers have independently described a coccus in hæmatoma auris, and although its causal connexion with this phenomenon still remains to be proved its discovery seems to open up a way into a future full of promise. Much is to be hoped for from the concentration of attention on the acute mental cases, and from the association, in regard to those, of clinical and pathological observation as urged in the recent report of the Whittingham Asylum, Preston, by Dr. Wallis; and we cordially endorse the view expressed in the paper which is more immediately under our notice, that "for the elucidation of the problems connected with the influence of intercurrent maladies on mental disorders the association of the trained clinician and the laboratory worker, skilled in the methods of bacteriology and organic chemistry, is particularly needed."

[1] THE LANCET, March 9th, 1895.

MEDICAL WORK IN CHINA.

WE have received the report for 1894 of the Presbyterian Mission Hospital at Swatow. The most noticeable point about the report is the light it throws upon the curiously phlegmatic temperament of the Chinese, except as regards matters which concern their supply of food. Thus Dr. Cousland says that the rice harvest in the south failed, the importation of rice from the north was stopped, owing, we suppose, to the war, and in October it looked as if a rice riot were imminent. "Fortunately, the timely arrival of steamers relieved the acuteness of the situation. People were seen in the streets of Swatow actually jumping for joy at the sight of steamers coming into the harbour." Contrast this outburst of mental emotion with what follows. Speaking of the diminished attendance Dr. Cousland says: "Wild rumours as to the dreadful practices of foreign doctors in Hong-Kong on plague patients, *and perhaps the vague idea that China was fighting some other country*, have also had some effect on the attendance." Having read this, we cease to wonder at the following. There were 492 operations, 201 dental extractions, and a considerable amount of minor surgery not included in the foregoing numbers was performed, and yet "chloroform was administered only eighty-eight times, as the Hoklos have remarkably little sense of pain." This insensibility, both mental and bodily, probably accounts for the horrible severity of the Chinese criminal code and the agonising nature according to Western ideas of the punishment.

INSANITY AND COMMERCIAL DEPRESSION.

THE report for 1894 of the Inspector-General of the Insane for New South Wales affords some interesting details showing the connexion between an increase of insanity and a decrease of commercial prosperity. The years 1892, 1893, and 1894 were all years of commercial depression, and the increase in the numbers of insane persons on the official register was respectively 178, 113, and 162. The inspector-general points out that commercial depression operates in two ways in bringing under official care a number of insane persons in excess of the average. First it directly produces insanity, especially in the neurotic and weak-minded, who are unable to stand up against conditions of life more than usually hard; and secondly, by compelling persons formerly able and willing to support idiot and imbecile relatives to throw them on the charity of the State.

Be this as it may, if we turn to the table showing the occupations of those admitted, readmitted, and under care during 1894 we are struck by a rather curious fact. Adding together the numbers of those included in the professional and commercial classes the total comes to 344; whereas the numbers of those included under miners, labourers, seamen, and shepherds come to 1475. Of course, the percentage of these various classes to the total amount of the population ought to be taken into consideration, but it seems curious that sailors and shepherds should be included in the list. Perhaps loneliness may have somewhat to do with it in the case of the shepherd. A life in the wilderness is apt to engender mental trouble. "Vertebantur ad melancholiam" was said of the old hermits in the Egyptian desert; and there is a woeful story on record of a haggard man who crawled to an Indian station crying, "There is no God, but I have walked with the devil," and was recognised as one who had been sent to take charge of a lonely district by himself. "Man is a social animal," as Aristotle said, and perhaps the cares of town life, wearying as they are, are more than counterpoised by the daily communication between a man and his fellows.

THE POISON OF THE ORNITHORHYNCHUS.

WE have received a pamphlet from the Physiological Laboratory of the University of Sydney containing observations by Dr. C. J. Martin and Dr. F. C. Tidswell on the femoral gland of the Ornithorhynchus and its secretion, with an experimental inquiry concerning its supposed toxic action. It will be remembered that we noticed at some length in THE LANCET of March 16th the conclusions arrived at by Dr. Anderson Stuart on this subject. The essay before us contains a good historical *résumé* of our information in regard to the spur of the ornithorhynchus and the gland attached to it, from the first notice of it by Horne in 1802, who thought the spur was a copulative organ, to Jamieson, who in 1817 discovered the gland connected with the spur, the duct of which traversed the spur, and the secretion of which he had observed to produce a poisonous effect on a man who had been endeavouring to capture a specimen after it had been wounded. Bennett and Owen were disinclined to admit that it was an organ of offence, whilst Dr. Anderson Stuart has no doubt that it is, and adduces cases of dogs which suffered severely from the action of the poison, and his opinion coincides with those of Dr. Martin and Dr. Tidswell. These observers have carefully examined the anatomy of the organ in question, with the following results. The glands are whitish, uniform, situated on each side of the spine over the acetabulum and the femur, and just outside the gluteus maximus, and rest on the rectus, iliacus, and glutei medius and minimus muscles. The duct emerges from the posterior half of the outer border of the gland, runs down the back of the leg to the tarsus, where it dilates into a sac and is then continued along the spur. The spur is about half an inch long and is attached to a supernumerary tarsal ossicle. The gland is invested by a layer of smooth muscle and is of a compound racemose type; the alveoli are buried by a single layer, or in one case by four layers, of epithelial cells, the contents of which are granular. The duct, though apparently single, contains two or three channels embedded in white fibrous tissue, without any admixture of smooth, muscular tissue. Neither in the living nor in the dead animal can the secretion be made to exude by pressure. Chemical examination of the secretion showed that it contains proteids, and that these consist chiefly of some form of albumin, with a little proteose, but no nucleo-albumin. The results of experiments on various animals showed that there was an analogy between the venom of Australian snakes and the poison of the platypus, since both owe their toxic properties to proteid constituents; that they both retard or prevent the coagulation of the blood when slowly introduced into the system in small doses; that they both cause intravascular clotting when injected into the veins in sufficient doses; that they both cause an almost instantaneous drop in the pressure of the blood; and that they both cause capillary hæmorrhages and œdema when locally applied. There is reason to believe that the secretion of the platypus is chiefly venomous at some particular season of the year, especially about the month of June.

SIR HENRY DUNCAN LITTLEJOHN.

GENERAL satisfaction will be caused throughout the profession, especially in Scotland, by the announcement that Dr. H. D. Littlejohn of Edinburgh is to receive the honour of knighthood. Dr. Littlejohn's ample claims to distinction are connected mainly with his labours in the cause of sanitation and public health, in the manifold departments of which he has long been a recognised authority. His medical career commenced more than fifty years ago, and he graduated as M.D. of Edinburgh University in 1847. To the general public he is chiefly known as the medical officer of health of Edinburgh. He has also filled the office of President of the Royal College of Surgeons of Edinburgh, and has for many years been Lecturer in Medical Jurisprudence at the Edinburgh School of Medicine.

CREDULITY AND FANATICISM.

THE remarkable ignorance and credulity of the lay mind with regard to any medical matter concerned with the process of generation is well shown by a case which occurred at Ballymacarrett, Belfast, and which is recorded in another column by one of our Irish correspondents. A young married woman gave birth to a child on May 4th, and went on satisfactorily for two days. She was then attacked with pain and vomiting, and a tumour was detected in the abdomen. A diagnosis of ovarian tumour was made and an operation advised. She was taken to the hospital, but no operation was permitted, and she died on May 11th. No post-mortem examination was allowed, and the common talk in the neighbourhood was that a second child existed and had not been delivered. Finally, the authorities determined to exhume the body and hold a post-mortem examination. On this being done on June 25th, a ruptured ovarian cyst with a twisted pedicle was found. The jury returned a verdict in accordance with the medical evidence and exonerated the medical men from blame. The case is only one more instance of what mischief and annoyance ignorant tongues can work.

CASTRATION FOR OVERGROWTH OF PROSTATE.

THE *New York Medical Record* of June 1st and June 8th reports the proceedings of the annual meeting of the American Surgical Association, the president being Dr. Fred. S. Dennis. *Inter alia*, an interesting discussion is given on the above subject. It was opened in a paper by Dr. J. William White of Philadelphia, Pa. Dr. White inclined to the view that the cause of prostatic enlargement was the survival of that function of the testicle which imparts masculinity to the individual and perpetuates the secretion of spermatic fluid long after it ceases to contain spermatozoa. He had collected 111 cases of double castration by competent surgeons for enlarged prostate in extreme and exaggerated forms which he said "had resulted in cures." All the same, he went on to show that twenty of these had died. In 87 2 per cent. rapid atrophy of the prostate follows, and in 52 per cent. great lessening of long-standing cystitis. In gauging the mortality, he thinks that twelve of the twenty fatal cases should in fairness be excluded, leaving 7 per cent. instead of 18 as the mortality. Even in the fatal cases

shrinking of the prostate had occurred before death. He thought the operation more promising than any alternative ones, as it is more easy of performance and free from the objection of subsequent fistula &c. From the discussion which followed it is clear that American surgeons are not yet quite satisfied with the evidence of the safety of the operation. Dr. L. S. Pilcher made a thoughtful speech, in which he said he thought the operation most indicated where the overgrowth was soft and glandular in nature. He detailed a case of operation in a man aged sixty-seven where gradual enlargement of the testicles had occurred. The operation was followed by delirium, pyrexia, albuminuria with casts, and death, in spite of primary healing of the wound. Dr. Pierson related three cases. In one, after good progress for six days, bad symptoms supervened. Opening up of the scrotal wound revealed gangrene, and death occurred on the eleventh day. Another speaker reported a case in which benefit followed the operation; but since the castration the patient had been subject to sudden flushings, heat, and sweating, which atropin and other remedies failed to relieve. Dr. Alexander feared that the operation was liable to be performed too readily from its being easy, and thought we had not yet passed the stage of physiological experimentation.

THE DAVOS INVALIDS' HOME.

A MEETING was held on June 27th at the house of Dr. Hermann Weber in support of this excellent institution, which has been the means of restoring to health and usefulness many whose limited resources could not otherwise have procured for them the advantages of the climatic treatment of Davos. The "Home" was founded eleven years ago, and has been entirely supported through the private benevolence of three English ladies, whose names are familiar to all those who have visited Davos. Mrs. Lord's unavoidable retirement through ill-health from the charitable work to which she has devoted so many years, and which owes everything to her admirable management, necessitates an appeal to public charity for the purchase of the freehold. With a view to collecting the necessary funds and to providing for the future management of the "Home," the following committee was appointed: the Right Rev. the Bishop of Marlborough, the Hon. Evelyn Ashley, Rev. D. Harford-Battersby, M.A., Rev. R. R. Resker, Dr. Hermann Weber, Dr. Symes Thompson, Dr. C. T. Williams, Dr. Wm. Ewart, and Mr. Arthur Herbert. None can better realise the importance of keeping the "Home" open for the benefit of the class to whom it has been so great a boon in the past than members of the profession. Their valuable help, whether direct or indirect, is earnestly invited. Contributions will be gratefully acknowledged by any members of the committee, or may be sent to Messrs. Williams Deacon, and Manchester and Salford Bank, Limited, 20, Birchin-lane, E.C., or 2, Cockspur-street, S.W.

THE PURIFICATION OF WATER.

THAT disease is conveyed by drinking-water is a truth which is now tolerably well established in the lay mind, but that water, even though not actually used for drinking or cooking, may convey enteric or other germs is far from being generally recognised. Professor Hankin, the bacteriologist to the Government of the North-West Provinces of India, has recently been studying the ways of native servants, with somewhat disquieting results. I have seen, he says, "a cook cooling a jelly by standing it in a small irrigation drain that ran in front of his cookhouse. The water running in this drain came from a well in which I had detected the cholera microbe. He cleaned a spoon by dipping it in the drain and rubbing it with his fingers; then he used it to stir the jelly." Professor Hankin's account of the way plates and dishes are washed during dinner is also calculated to make us speculate on what might happen, for the Oriental scullery boy seems to have a very fair notion, though of course in an amateur way, of cultivating microbes. In this country perhaps we are not so much exposed to danger from these causes; but anyone who has been in and out of the houses of the poor knows the painfully inadequate water-supply—the uncovered cisterns and the lack of cleanliness in the preparation of food which too often exist. We think that the issue of a small leaflet, now that August is coming on, pointing out the necessity for cleanliness in the preparation of food and the washing of plates and dishes, might be the means of obviating many a death from summer diarrhœa.

THE NEW MEDICAL OFFICER OF HEALTH FOR LAMBETH.

BY a majority of fifty votes Mr. Joseph Priestley, B.A. Lond., M.D. Edin., D.P.H. Cantab., was elected medical officer of health for the large parish of Lambeth by the vestry at their last meeting. Six candidates were selected to go before the vestry, and after being interviewed and questioned were balloted for by the eliminating ballot. Their names were: Mr. Alexander, medical officer of health, Poplar and Bromley; Dr. Bond, medical officer of health, St. Olaves and Holborn; Dr. Cooper-Pattin, medical officer of health, Norwich; Dr. Priestley, medical officer of health, Leicester; Dr. Wilde, medical officer of health, Bedfordshire County Council, and assistant medical officer of health, Croydon; and Dr. Wheaton, inspector under the Local Government Board, London. Dr. Joseph Priestley is well known in the public health service, more especially on account of the firm stand he made at Leicester during the small-pox epidemic, having to fight a very strong antivaccinating opposition. This opposition Dr. Priestley overcame successfully, without giving in one iota in regard to his views as to the efficacy of vaccination and revaccination in modifying and preventing attacks of small-pox, whilst his reports on the outbreak will go far to enhance that view. Before going to Leicester Dr. Priestley was assistant medical officer of health to the vestry of Camberwell, and whilst there had the advantage of being trained by Dr. Bristowe, F.R.S.

WE wish to call attention to the change that has been made in the date of the Prince of Wales's visit to Epsom. His Royal Highness, who will be accompanied by the Princess, will lay the foundation stone of the additional buildings to the Royal Medical Benevolent College on Monday next, July 8th (for full particulars see p. 37), instead of on Tuesday, July 9th, as originally arranged.

DR. RICHARD DEANE SWEETING, one of the medical inspectors of the Local Government Board, and late medical superintendent of the Western Fever Hospital, has won the Holt Scholarship at Gray's-inn. We congratulate our professional brother on his successful progress in the study of the law.

H.R.H. THE PRINCE OF WALES has graciously accepted the Chancellorship of the University of Wales in succession to the late Lord Aberdare.

BY direction of the Dean a special meeting of the School Committee will be held in Charing-cross Hospital to-day (Friday), at 3.30 P.M., to receive a suggestion from a member of the committee to found a "Huxley" memorial prize or scholarship.

DR. EDWARD WAYMOUTH REID, late Assistant Lecturer on Physiology at St. Mary's Hospital, Professor of Physiology in University College, Dundee, has been selected for one of the Grocers' Company's Research Scholarships.

Pharmacology and Therapeutics.

ESSENTIAL OILS.

THE relation of essential oils to the British Pharmacopœia and to trade purposes has lately been considered by Mr. J. C. Umney in the *Pharmaceutical Journal*. He thinks the use of the following so limited that they might be excluded from a new Pharmacopœia: chamomile, copaiba, rue, savin, and perhaps spearmint; but he recommends the inclusion of the following oils: bergamot, bitter orange, rose, and possibly synthetic winter-green oil (methyl-salicylate). He objects to the present restriction "distilled in Britain," thinking that it is only in exceptional cases that climate and soil influence for the better the character of the oil obtained from plants of the same species, and he maintains that it would be better for the pharmacopœial description, characters, and tests to include the source and the range of specific gravity at convenient temperatures. He also desires to see the following included: optical rotation, solubility in alcohol or other solvents, boiling point, and qualitative and quantitative chemical tests. The chief difficulty in the way of including the various essential oils in the Pharmacopœia lies in the fact that they are only to a relatively small extent employed in medicine, while enormous quantities are used for soap scenting, culinary and other industrial purposes by others than pharmacists. This has necessarily led to the importation of quantities of cheap and more or less impure oils. If these are required for trade purposes only, and not for employment by medical men, it is difficult to realise the need for their inclusion in the Pharmacopœia. Mr. Umney's paper contains a very careful summary of the characters of the principal essential oils handled by pharmacists, and it therefore calls for, and will doubtless receive, full consideration from those engaged upon the work of revision.

ARGENTAMIN AND ARGONIN.

As substitutes for ordinary aqueous solutions of nitrate of silver two organic compounds have been recently introduced which are said to have a still greater microbicidal action and to be less irritating than the nitrate. Argentamin consists of a solution of ten parts of phosphate of silver with an equal quantity of ethylene-diamine, $C_2H_4(NH_2)_2$, in a hundred parts water. This does not throw down chloride of silver when mixed with a solution of common salt, nor does it precipitate albumen. Clinically it is said by Dr. Schäffer of Breslau to act more energetically than a common nitrate of silver solution of the same strength, both destroying microbes of a pathogenic character better and also penetrating more deeply into the tissues. He found it especially valuable in the form of injections for gonorrhœa, and Lang has used it with good results in a large number of cases of abscesses of glands and of the connective tissue. Sometimes its irritant action is too great, but inconvenience from this may be avoided with due care. Another organic combination of silver has just been prepared by Dr. Röhmann and Dr. Liebrecht with casein. This new preparation, which they style argonin, contains only one quarter the amount of silver that the nitrate does. It is soluble in water, the solution being, however, opalescent and of a yellowish colour. It is said to be far less irritating to the tissues than argentamin. Like it, too, it forms no precipitate when common salt is added in solution, and according to Dr. R. Meyer of Breslau it has a remarkable microbicidal action, especially on the gonococcus.

GALLICINE IN OPHTHALMIC PRACTICE.

Gallicine, which is the methylic ether of gallic acid, is a white crystalline substance, soluble in hot water, in warm spirit, and in ether. Chemically it presents certain analogies with resorcin and with pyrogallol, and as these substances are of use in catarrhal and some cutaneous affections, it occurred to Dr. Mellinger, assistant to the Basle Professor of Ophthalmology, Dr. Schiess, to try the effect of gallicine in catarrhal conditions of the conjunctiva and in eczema of the eyelids and some other affections of the eye. The powdered substance, which is very light, is dusted into the eye or applied to the cutaneous surface by means of a brush, according to circumstances, in the same manner as calomel is employed. The application, which is made once or twice a day, is usually followed by a smarting sensation, which, however, soon passes off, but can be relieved by cold water compresses or entirely prevented by the previous use of cocaine. From an experience of some 200 cases Dr. Mellinger warmly recommends this remedy as superior in a good many eye affections to dermatol and gallinol. Conjunctivitis, whether catarrhal, suppurative, or phlyctenular, yielded to the gallicine treatment in a few days, and superficial keratitis, which had resisted the application of nitrate of silver, acetate of lead, compresses saturated with lead lotion, white precipitate ointment, atropin drops, &c., rapidly improved under gallicine. In phlyctenular affections gallicine has the advantage of being suitable, even when there is hyper-secretion, which, according to Dr. Mellinger, is a contraindication to the employment of calomel.

THE EXTERNAL APPLICATION OF PILOCARPINE IN NEPHRITIS.

Dr. Humbert Molliere has made some interesting researches on the value of pilocarpine applied externally in cases of nephritis. The treatment consists in rubbing into the skin an ointment composed of white vaseline (100 gr.) and nitrate of pilocarpine (5 to 10 centigrammes), and then covering up the part with cotton-wool and securing with bandages. The patient generally soon experiences a feeling of comfort, dyspnœa abates, and respiration becomes more regular, and only in very rare cases is the treatment badly borne. Perspiration quickly occurs, and is very profuse, in spite of the small quantity of alkaloid used, and at the same time there is abundant diuresis, and Dr. Molliere has drawn up interesting charts, showing a rise and fall in the quantity of urine corresponding to the pilocarpine applications. All varieties of nephritis have been treated by this method, but the best results have been obtained in acute cases, where the albumen has often quickly disappeared and a general amelioration of symptoms rapidly taken place, these good results being chiefly attributed to diminished congestion caused by the drug. Less favourable cases are naturally those in which the cardio-vascular system has already become secondarily affected. Where actual uræmia has set in this method is not so satisfactory, but is found to be successful if applied after the more pressing symptoms have been relieved by more energetic methods. The physiological action of pilocarpine when thus applied is found to be almost entirely local, and does not cause excessive secretion of the salivary and other glands, as it does when given by the hypodermic method.

We noticed in this column recently a preparation called airol, mentioning that it had been used with success as an antiseptic and styptic dressing. We are asked to say that the sole agents for this substance are Messrs. R. W. Greeff and Co., of 3, Eastcheap, E.C., to whom inquiries should be directed.

THE ANNUAL REPORT OF THE MEDICAL OFFICER OF HEALTH FOR THE ADMINISTRATIVE COUNTY OF LONDON.

III.[1]

THE only other topic in Mr. Shirley Murphy's report to which space permits allusion is a special report to his authority on the water-supply of London. On the issue of the report of the Royal Commission on Metropolitan Water-supply the County Council referred it to their medical adviser for his opinion; and this, when received, was held to be of so great public interest as to render expedient the printing of it for general circulation. It accordingly appears as an appendix to the annual report before us. The general drift of the conclusions arrived at by the Commission as to the wholesomeness of the London drinking water is matter of common information; it is far otherwise, however, with regard to the evidence upon which these conclusions are supposed to have been based, and this evidence has therefore been subjected to detailed and searching criticism in the appendix referred to. Mr. Shirley Murphy passes in review much of the

[1] Parts I. and II. were published in THE LANCET of June 22nd and 29th respectively.

expert evidence produced, his remarks upon this, and the judgment of the Royal Commission thereupon, being given by Mr. Shirley Murphy under the following headings: (1) Dilution of polluting matter in water; (2) viability of the typhoid bacillus; (3) number of organisms in water required to produce disease; (4) storage and filtration of water; (5) evidence of experience as to typhoid fever prevalence (especially that dealt with by Dr. Barry in his report on the typhoid fever epidemic in the Tees Valley; and (6) definition of the term "efficient filtration" of drinking-water. Mr. Shirley Murphy's remarks and arguments under each of the above headings are clear, forcible, and apposite, and, whether they meet with general acceptation in our profession or not, they certainly leave us in no doubt of their author's determination to secure in future and to maintain the utmost possible purity in the water-supply of the metropolis. In many important points Mr. Shirley Murphy traverses the report of the Royal Commission and gives his reasons for so doing, which are in all cases weighty and evince a thorough acquaintance on his part with the minutest details of the subject.

It is very obvious that the reason why the medical officer of the County Council regards the question of water-supply as of primary importance from a public health point of view is because of the admitted tendency of certain fatal diseases, especially typhoid fever and cholera, to disseminate themselves through the agency of drinking water. We strongly suspect, therefore, that the question of our water-supply is to Mr. Shirley Murphy very much on all fours with the question of typhoid fever (and possibly cholera) prevalence in the metropolis. In this attitude towards the water question he may rely upon the hearty support of the medical profession. It is probably immaterial to Mr. Shirley Murphy whether the water undertakings of the metropolis continue, as at present, in the hands of a number of private companies, or whether these rights are acquired on behalf of the public by the London County Council, as recent events would seem to render it probable that they will be at no very distant period from the present. But he would have our complete sympathy did he contend, as he is obviously entitled to do, that the officer upon whom devolves the chief guardianship of the public health of this vast metropolis should enjoy every facility for satisfying himself that those who provide the public with drinking-water adopt every known device for protecting that commodity from contamination. This is not a matter of mere sentiment. It is true that, according to the table published in another part of Mr. Shirley Murphy's report, typhoid fever mortality has shown a continued decrease during the last two complete decennia, and, in fact, down to the end of 1892; but the fact is a disquieting one that in the year 1893 a very serious rise in the mortality from this disease was observed. There does not appear to have been any noteworthy change in the sanitary condition of London which could account for this increase, and although the report contains no indication of the kind it is at least conceivable that in searching for its cause the medical officer may have desired to examine carefully the relation of water-supply to the local and general prevalence of the disease. Under existing arrangements it is very evident that any effective supervision of the metropolitan water-supply as a whole by the medical officer of the County Council is impracticable, and this for reasons which on reflection will be sufficiently apparent.

Returning now to the report of the Royal Commission, we find that the Commissioners insist very strongly on the necessity of proper treatment of the river water as a condition of its admissibility for drinking purposes. They state explicitly that the water which flows down to the intakes must be carefully subjected to certain processes of subsidence and filtration before it is brought into a suitable condition for delivery and consumption, and that the quality of the water when delivered depends largely on the thoroughness with which these processes are carried out. They do not go the length of prescribing exact regulations as regards the process of filtration, subsidence, &c., but they conclude their report with the following incisive statement: "We cannot shut our eyes to the fact that the provision for these processes [filtration &c.] differs enormously in the different companies, and in some of them is, to our mind, inadequate. Regulations on these matters should be drawn up after competent inquiry, and adherence to these regulations should be strictly enforced." Of this important judgment Mr. Shirley Murphy pertinently remarks that "the necessary corollary to the report of the Royal Commission on Metropolitan Water-supply is the issue of another Royal Commission to make such inquiry and such experimental investigation as may be required to determine the precise conditions to which polluted streams must be subjected in order to make their water uninterruptedly fit for domestic use." Mr. Shirley Murphy closes his most valuable and interesting report with these weighty sentences, which we give *verbatim*. "In view of the changes effected in the rivers, and subsequently in the filters, the risk to Londoners is, I believe, small, and certainly intermittent, and, indeed, may be thought of as comparable to those possibilities of injury from accident in the street to which every human being is subject during the whole of his life. The risk, indeed, is to each a possibility and not a probability, *but, such as it is, I believe it exists.* If we recognise, as I believe we may, that the safety of London residents is dependent upon the efficiency with which deleterious matter in the London rivers is by artificial means removed from the water supplied to the metropolis, the conditions under which this removal is to be continuously ensured must obviously be determined with absolute precision, and *an administration must be provided to secure that the object in view shall be attained.*" This is the deliberate conclusion arrived at by the medical officer of health of the administrative county of London, writing under a keen sense of responsibility, and as such we trust it will be appreciated as it deserves and acted upon by the administrative authority to whom this report is addressed.

MEDICAL CERTIFICATES FOR THE LONDON BOARD SCHOOLS.

THE School Board is developing a large amount of casuistry. In our issue of June 8th we called attention to the following resolution passed by the Board on the motion of Mr. Sharp:—"That the West Lambeth Divisional Committee be authorised to appoint for one year, upon the under-mentioned conditions, six doctors in that division to examine cases in which the medical certificate produced is considered by the divisional superintendent to be doubtful, or in which it is desirable to have a definite medical opinion. (*a*) That each case be first referred to the divisional member in charge of the school where the child ought to attend. (*b*) That a payment of 2*s*. 6*d*. shall be made for each case examined. (*c*) That the number of cases to be dealt with in this manner shall not exceed 100 in a year. (*d*) That the names of the doctors selected shall be forwarded to the magistrates having jurisdiction in the division." Mr. Athelstan Riley (whose amendment that all words after "produced" in the first paragraph should be struck out and "not signed by a properly qualified medical man" substituted was rejected) asked Mr. Sharp at the meeting of the Board on June 27th the following questions, amongst others:—

1. The names of the doctors in the Tower Hamlets and East Lambeth divisions who have consented to examine medical certificates considered by the divisional superintendents to be doubtful.
2. The number of certificates signed by properly qualified medical men in the above divisions which, being considered by the divisional superintendents to be doubtful, have been submitted for examination to the aforesaid doctors.

3. The proportion these bear to the total number of certificates issued in these divisions.

4. Whether the certificates signed by the aforesaid doctors are examined with (*a*) the knowledge and (*b*) the permission of the signatory in each case.

The following is the answer by Mr. Sharp (Chairman of the School Accommodation and Attendance Committee) to the foregoing questions:—

"It may be well to premise my remarks by observing that Mr. Riley labours under a misconception in assuming that the local medical men appointed by the Board have consented to 'examine medical certificates,' or that medical certificates will be 'submitted for examination to the aforesaid doctors.' These local medical men have been appointed 'to examine cases in which the medical certificate produced is considered by the divisional superintendent to be doubtful, or in which it is desirable to have a definite medical opinion.'"

Mr. Sharp then said that categorical answers would be misleading to the Board, so he preferred to make the following statement. After quoting his letter, which appeared in our columns of April 30th, 1895, he continued:—

"From the foregoing statement it will be seen that it is incorrect to suppose that all the cases which have been submitted to the local medical men appointed by the Board have been cases in which certificates have been given by other medical men, but which have been considered for some reason or other to be unsatisfactory. As a matter of fact, so far as I have information, the majority of the cases which have been submitted to these gentlemen have been cases in which no medical certificate has been produced by the parent, and in which it was considered by the divisional members to be difficult, if not impossible, to obtain such certificate. With reference to the latter cases, I might mention that, in some parts of London, at any rate, I have evidence that district medical officers of the guardians refuse to furnish, without payment, such certificates to persons in receipt of parochial medical relief. In these cases, therefore, the divisional committee must, in order to satisfy themselves as to the correctness, or otherwise, of the statement made by the parent as to the alleged illness of the child, either at once proceed with the prosecution before a magistrate or obtain a medical opinion in their own behalf. In those cases in which the child is ascertained to be unable to attend school, the Board are saved both the expense and the odium of unsuccessful legal proceedings, and the parent is saved the unnecessary pain and annoyance of a prosecution before a magistrate."

We should like to know what is the difference between "examining medical certificates considered to be doubtful" and "examining cases in which the medical certificate is considered to be doubtful." After this preface Mr. Sharp changed his ground and went on to explain that most of the cases submitted to the medical men were those in which no medical certificate had been obtained. If this is all the Board wanted why did it not accept Mr. Riley's amendment of May 30th?

Mr. Sharp's statement is simply playing with words. We will put the whole case in plain language. 1. The Board, by means of its divisional superintendents, considers certain medical certificates to be doubtful. 2. These certificates are presumably signed by qualified medical men. 3. The Board has appointed certain other medical men to examine these particular cases in which the certificate is considered doubtful. 4. That is to say, the Board has appointed one set of medical men to revise or examine, or set aside the diagnosis and opinion of another set of medical men. Let Mr. Sharp deny this if he can without beating about the bush. We warn the School Board, as we warned it in our issue of June 8th, that the result will be that no medical man will sign certificates at all, but will rather give evidence in case of a prosecution, and then, as Mr. Sharp pathetically puts it, the Board will "incur the odium of unsuccessful legal proceedings," and, in our opinion, it will well deserve this result.

CONSECRATION OF THE RAHERE LODGE OF FREEMASONS.

SATURDAY last was a red-letter day for St. Bartholomew's Hospital. In the great hall of the hospital a new Masonic Lodge was consecrated, named after Rahere, the founder of the hospital seven and a half centuries ago. Everything combined to make the function a success—a bright and sunny summer's afternoon, the presence of H.R.H. the Prince of Wales, the Grand Master, and a brilliant representative gathering of those whose names are equally well known in Masonry and Medicine.

At 5 o'clock lodge was opened, the Master's chair being occupied by Bro. E. Letchworth, Grand Secretary. Shortly afterwards the Prince of Wales arrived, accompanied by the Crown Prince of Denmark, who is Grand Master of the Freemasons of his own country. The Earl of Lathom, Pro-Grand Master of England, acted as consecrating officer and then took the chair. He was supported on his right by the Prince of Wales and the Crown Prince of Denmark, while the Senior Warden's chair was occupied by Lord Roberts of Candahar, Grand Senior Warden, the Junior Warden's chair being filled by Lord Skelmersdale. The duties of director of ceremonies were undertaken by Bro. Frank Richardson; the Dean of Gloucester, Grand Chaplain, acted as chaplain; and Bro. P. H. Waterlow, Past Grand Deacon, as inner guard.

The brethren received the two Grand Masters in due Masonic fashion, and accorded to each the salute due to his rank. The lodge presented a very brilliant spectacle, over 300 grand officers and brethren being present. Among them we noticed:—Viscount Dungarvan, Provincial Grand Master of Somerset; Colonel Le Gendre Starkie, Provincial Grand Master of East Lancashire; General Laurie, Past Grand Warden; W. M. Stiles, Grand Treasurer; Rev. Cooper Smith, D.D., Past Grand Chaplain; Lennox Browne, Past Grand Director of Ceremonies; R. Loveland Loveland, President of the Board of General Purposes; R. Horton Smith, Q.C.; H. F. Frost, Grand Organist; E. Cutler, Q.C., Past Grand Organist; Dr. Balfour Cockburn, Provincial Grand Master of Guernsey and Alderney; Dr. Hugh Mackintosh and Bro. Chas. Martin, Past Assistant Grand Directors of Ceremonies; the Earl of Euston, Provincial Grand Master, Northamptonshire and Huntingdonshire; Alderman Walter Vaughan Morgan; General J. C. Smith, Past Grand Master of Illinois. There were present a large number of medical brethren, including Bros. Reginald Harrison, Henry Morris, Edmund Owen, W. P. Herringham, Samuel West, Arbuthnot Lane, A. A. Bowlby, R. J. Reece, Essex Wynter, Leopold Hudson, Howard Tooth, Alban Doran, W. H. H. Jessop, Bruce Clarke, H. J. Waring, C. A. Parker, Danford Thomas, and F. W. Clark.

The impressive ceremony of the consecration was proceeded with, the Earl of Lathom giving the invocation, while the Dean of Gloucester delivered the oration, and the anthems were sung by Bros. Frost, Kenningham, Fryer, and Stubbs. The Grand Master then constituted the lodge, the following officers being appointed:—Bros. Clement Godson, M.D., P.G.D. (W.M.); Thomas Trollope, M.D., P.G.D. (Acting I.P.M.); Alfred Cooper, F.R.C.S., P.G.D. (S.W.); W. J. Walsham, F.R.C.S., P.M. (J.W.); D'Arcy Power, F.R.C.S., P.M., P.G.J.W. Warwickshire (Treas.); T. G. A. Burns, M.R.C.S., P.M., P.P.G.D. Surrey (Sec.); Walter Gripper, M.B., P.M. (S.D.); Phineas S. Abraham, M.D. (J.D.); G. H. R. Holden, M.D. (I.G.); F. Swinford Edwards, F.R.C.S., P.M. (D.C.); J. H. Gilbertson, M.R.C.S., P.M., P.P.S.G.D. Herts (Stwd.); C. B. Lockwood, F.R.C.S., W.M. 1150 (Stwd.); C. P. White, M.B. (Stwd.); Ernest Clarke, F.R.C.S. (Org.); Madden, Librarian of St. Bartholomew's Hospital (Tyler).

Among the other founders of the Lodge are Bros. W. Haig Brodie, B. Latter Tandy, A. G. R. Foulerton, H. D. Lauchlan, G. H. Forman, J. E. Sandilands, C. A. Parker, A. A. Bowlby, F. W. Clark, W. T. Partridge, J. Pickett, and R. J. Reece.

The first act of the new Lodge was to enrol its first honorary member in the person of the Prince of Wales. The Benediction having been pronounced, Their Royal Highnesses took their departure, and on leaving the hospital received an ovation from the students gathered in the quadrangle. The guard of honour was furnished by the St. Bartholomew's Hospital Company of the Volunteer Medical Staff Corps. The brethren afterwards adjourned to a banquet at the Albion, Aldersgate-street, the toast of "The Visitors" being responded to by General Smith of Illinois.

We wish this new professional lodge every success; it has received a magnificent christening, and the number of joining members is already very large.

A MAHOMEDAN DOCTOR ON THE MECCA PILGRIMAGE.

MUCH has been written concerning the pilgrimage to Mecca, but, as a rule, such writings are somewhat one-sided. Either the writers are Mahomedans who know nothing of the Western exigencies with regard to sanitation, or else they are not Mahomedans, and are therefore out of sympathy with the pilgrims, are not allowed to approach the

holy places, and consequently often criticise what they have not been able to see. Dr. Saleh Soubhy, as Doctor and Laureate of the Paris Faculty of Medicine, may be expected to take a Western European view of the sanitary difficulties attending the pilgrimage; while, as a good Mahomedan, he is in full sympathy with the pilgrims. This sympathy does not render Dr. Soubhy blind to the grave dangers caused by the utter want of sanitation. Speaking of the town of Djeddah, where the pilgrims land, he says: "The cleansing of the town is a matter of the utmost simplicity; the rain does this work, and I must hasten to add that it only rains once or twice in the year—and then! It is not necessary to make a great effort of imagination to have some idea of the state of affairs within the town. The entire surface of the soil is encumbered with the débris of vegetables, with spoilt fruits, and refuse of all descriptions, and giving off all sorts of odours. Horned animals, donkeys, horses, camels, and wild dogs leave the trace of their passage, but we must not complain of this, for the dogs and goats which wander everywhere are, after all, the only scavengers of the town, as they eat much of what would otherwise decompose on the soil. On the other hand, the population which crowd on a relatively restricted space have a system of drainage that is really surprising. It is a country of expedients. Nothing is more simple. When a cesspool is full a hole is dug close at hand and the contents of the cesspool are emptied into it. The hole is then covered over. Of course, infiltrations from these holes reach the neighbouring wells, whence the water is drawn which the pilgrims drink." When we consider the great heat that prevails in the daytime, and the damp that reigns at night, it is not surprising that cholera often breaks out at Djeddah. The water is extremely foul. Large animalcula can be seen in it, even without the aid of a microscope. The Turkish Government has given a considerable sum to construct an aqueduct to bring good water to the town, but somehow the canal has never worked properly. This failure is attributed to the action of the proprietors of the wells, who desire to preserve their lucrative privilege of selling foul water to the camel drivers and pilgrims.

Dr. Soubhy next protests against the folly of women attempting the pilgrimage during the period of gestation. He describes how the oscillatory movement of the camel produces miscarriages, followed frequently by hæmorrhage and the death of both mother and infant. The caravan, however, cannot stop, and it is impossible to nurse efficiently the mothers while the march continues. If any portion of the caravan stopped it would certainly be attacked by the Bedouins, who, Dr. Soubhy explains, are not true Mahomedans. On questioning a Bedouin as to the nature of his harvest he cynically replied, "My harvest is the pilgrim." Speaking of Mecca, Dr. Soubhy contents himself with saying that the condition of the town is very similar to what he saw at Djeddah. Nor does he say anything about the danger of contamination at the holy well of Zimzim. He simply relates that, according to popular belief, this well leads to Paradise. Consequently several pilgrims have thrown themselves into the well. As the bodies were never recovered it is natural to conclude that there are subsoil currents of water of considerable dimensions and power. This may be some protection. The Sultan has, however, now caused a high railing to be placed round the well so that the faithful cannot so easily jump into the water, and must perforce wait till a more natural death opens the gates of Paradise. Speaking of the Courban-Bairan festival, Dr. Soubhy estimates that at Mouna some 900,000 animals are sacrificed. This custom, at least, he has the courage to denounce. "It is easy to imagine what dangers this state of things may engender, what epidemics may be caused by these thousands of carcases in putrefaction, and how insufficient is the recent order, emanating from the Turkish Government, to bury this multitude of carcases." To burn the carcases and convert them into animal manure would be a better and more profitable solution of the problem.

In an appendix dealing purely with the sanitary question Dr. Soubhy suggests that a railway from Djeddah to Mecca, then to Medina and Yambo, would pay and would save a great loss of life resulting from the painful journeys on foot across the deserts. He also urges that children under ten years of age, women in the period of gestation, the old and infirm, those who have not been vaccinated within three years, and those who have not sufficient means for their maintenance, should not be allowed to embark on the pilgrimage; that those who are allowed to start should have a circular given them indicating what sort of clothes and provisions they should take; and that portable pharmacies should form part of the luggage of every caravan. There are no pharmacies, it appears, at Mecca, Mouna, and Yambo, yet thousands of pilgrims pass through these places suffering from diarrhœa, fever, purulent ophthalmia, and abscesses. Then the Red Sea ships are not only overcrowded by pilgrims, but also by the unnecessary luggage they take with them; and we are assured that there are often more pilgrims on board than the number sanctioned by the law. Nor are the rules as to the presence on board of a surgeon and of a medicine chest strictly observed. As for the sanitation of the towns, as there is the desert close at hand it would be easy enough to dispose of the sewage if a system of drainage was established.

Finally, Dr. Soubhy quotes the Prophet, who said, "You must avoid entering a country contaminated by an epidemic, so as to respect the will of God (God having said, Thou shalt not throw thyself into danger), and you must not leave a contaminated country, so as not to show that you are flying from the will of God." In accordance with this Dr. Soubhy proposes that pilgrims from the south—India, Java, &c.—coming from countries where cholera is endemic should visit Mecca alternate years, taking the uneven numbers, 1895, 1897, &c. Pilgrims from the north—Turkey, Egypt, Morocco, Algeria, &c.—could go in the years with even numbers, 1896, 1898, &c., and thus avoid meeting those who came from cholera-infected countries, and in this manner carry out the precept laid down by Mahomed.

THE NEW WATER SCHEME FOR BELFAST.

ON June 25th, on the invitation of the Chairman of the Belfast Water Commissioners, a number of Belfast merchants and others visited the "Silent Valley," the site of the proposed new reservoir, which it is thought will be completed within another year. This Silent Valley is situated in a remote but charming district in the Mourne Mountains, about five or six miles from the well-known seaside resort, Newcastle, in county Down. This new water scheme is by far the most important ever undertaken for Belfast, and it is said it will cost upwards of three-quarters of a million pounds sterling. The new catchment area is upwards of 9000 acres in extent, but it can be added to in the future. It has an elevation varying from 450 ft. to nearly 2800 ft. above sea-level, and it consists of high mountain slopes, largely composed of granite and boulders on the surface; hence it is of the very best description for a domestic water-supply. Another advantage it possesses is that it is free from cultivation and pollution of any kind, is uninhabited, and is in close proximity to the sea. The whole of the lands in this area will be purchased by the Belfast Water Trust to preserve its present character and to prevent risk of any future pollution. At present the water is collected by the Kilkeel and Annalong rivers, which empty themselves into the sea between Kilkeel and Newcastle. The Kilkeel river will be intercepted in the "Silent Valley" by means of a large storage reservoir having an earthen embankment some 520 yards long across the valley, and it will be upwards of 90 ft. high over the present river-bed. The top water area will be nearly 250 acres, and the total holding capacity will be 2850 million gallons of water. The total supply available from the whole of the Mourne districts will be, when fully developed, about 30,000,000 gallons per day. The supply will be drawn from this reservoir for use in Belfast through a number of large-geared valves at different levels on the outlet standpipe, which will allow the water to pass in large or small quantities through the main outlet tunnel into the main gravitating conduit, which will be formed of concrete, having a maximum carrying capacity of 30,000,000 gallons per day, the size being 5 ft. 6 in. by 5 ft. 6 in., and with a regular fall of 18 in. per mile. The main conduit will be continued along the mountain slopes to near Newcastle, where it will be carried through Slieve Donard and St. Thomas's Mountains in a tunnel some two and a quarter miles in length, with a fall of 12 in. per mile, and a maximum capacity of 30,000,000 gallons per day. Some parts of this tunnel will be 600 ft. below the surface of the ground. The service reservoir will be made large enough to meet the demands of the city, having a storage capacity

of about 80 000,000 gallons, or eight days' supply of 10,000,000 gallons per day. The service reservoir will be 350 ft. above sea-level, and hence a supply will be assured to the most elevated districts in the Belfast water-supply area. The Commissioners will not bring in the full supply available for the Mourne district just yet, but will limit the present section to what will meet the increasing demands of the city for a number of years to come. Additional supplies can afterwards, if found necessary, be brought from the same district at a very small increased outlay. The water is excellent in its characters, and it is interesting to note that, while in 1850 the water for Belfast was obtained from a small place on the Dublin road, in 1865, 1875, and in 1878 further powers were taken to increase the supply, and in 1884 the Stoneyford scheme was adopted and £750,000 expended. The city of Belfast, however, is increasing so rapidly, and so much water is required, not merely for domestic purposes, but also for the numerous manufactories, that on all hands it is felt the Commissioners have acted wisely in going in for a new supply which will, practically speaking, be inexhaustible. We understand that at present there are in the various reservoirs of the Water Commissioners 150 days' supply.

METROPOLITAN HOSPITAL SUNDAY FUND.

THE collections in aid of the Metropolitan Hospital Sunday Fund received at the Mansion House up to the present time (Thursday noon) amount to nearly £39,000. There are several large collections still to be received, and the synagogues have not yet forwarded their donations to the fund. We continue below the lists of the amounts received at the Mansion House and at THE LANCET office.

	£	s.	d.
Lord Iveagh	1000	0	0
St. Peter's, Eaton-square:— Parish Church... ... St. John, Wilton-road Rev. John Storrs, M.A. ... St. Peter's Chapel ...	787	5	6
St. Stephen's, South Dulwich	160	7	10
Union Chapel, Islington	111	16	6
St. Michael's, Paddington (Rev. G. F. Prescott)	170	4	2
St. Peter's, Cranley-gardens (Rev. Dr. Ridgeway)	361	6	8
Holy Trinity, Paddington (Rev. D. Moore)	123	15	3
St. Katherine's Royal Collegiate Chapel, Regent's-park ...	28	12	0
St. Pancras Parish Church (Rev. H. L. Paget)	38	6	9
Mr. R. W. Inglis	52	10	0
St. Mary Virgin, Primrose-hill (Rev. A. Spencer)	75	0	0
Wimbledon Churches (per Rev. Canon Haygarth)	171	15	7
St. Stephen's, Paddington (Rev. N. R. Neligan)	131	2	10
Christ Church, Lee (Rev. W. P. McDonald)	42	2	0
Gray's-inn Chapel	34	13	4
Yiewsley Parish Church	21	5	0
Stepney Parish Church and St. Faith (Rev. F. J. Hobbins)..	21	2	9
St. James's, Hatcham (Rev. W. H. Stone)	59	1	7
Grove-park, West, Parish Church	22	13	0
All Saints', Putney (the Hon. the Rev. R. Henley)	30	10	0
St. Paul's, Harringay	25	0	0
St. John's, Upper Holloway (Rev. J. Seaver)	21	16	7
St. Margaret's and St. Paul's, Barking (Rev. H. H. Henson)	43	3	8
St. Mary's, Plaistow, Kent (Rev. W. Hodgson)	31	19	4
North Finchley Congregational Church...	22	1	5
Emmanuel Church, Maida-hill (Rev. J. G. Tanner)	31	0	0
Orpington Parish Church (Rev. H. F. Chenevix-Trench) ...	26	16	9
St. Matthew's, Redhill (Rev. H. Brass)	32	3	6
Streatham-hill Congregational Church	30	15	0
Christ Church, Brondesbury (Rev. C. D. Williams)	53	12	0
Essex Unitarian Church, The Mall	70	0	0
Christ Church, Southgate (Rev. C. F. R. Wilson)	43	8	6
South Kensington Presbyterian Church	29	6	4
Christ Church, East Greenwich (Rev. G. S. Reaney) ...	28	10	5
Stamford Hill Congregational Church	89	14	1
All Soul's, Langham-place (Rev. J. H. Acheson)	39	0	0
Gospel Oak Congregational Church	20	0	0
St. Mary Magdalene, Holloway-road (Rev. J. A. Faithfull)...	26	1	8
Box outside Mansion House...	3	14	1
Church of the Annunciation (late Quebec Chapel)	338	2	2
Temple Church (Rev. Canon Ainger)	141	9	7
St. Philip's, Earl's-court (Rev. W. Smale)	110	7	3
Sir Savile Crossley (a further)	1000	0	0
All Saints', Blackheath (Rev. W. H. Snell)	69	7	8
St. Paul's, Herne-hill (Rev. W. H. Stone)	45	0	1
St. Barnabas, Dulwich Village	21	0	0
All Saints', Ennismore-gardens, with additions (Rev. W. C. Muriel)	500	8	1
St. Margaret's, Lee, and Boon's Chapel	54	15	7
St. Mary Aldermary and associated parishes (Rev. E. F. N. Smith)	95	12	8
St. Luke's, Nutford-place	97	15	6
St. John's, Notting-hill (Ven. Archdeacon Thornton) ...	58	1	5
St. Stephen's, Avenue-road	40	1	6
Magdalene Hospital Chapel, Streatham	40	5	8
Christ Church and St. Barnabas, North Finchley (Rev. H. Stephens)	26	6	6
Christ Church, Forest Hill (Rev. G. J. Jones)	46	16	3
Streatham Parish Church and Mission	83	16	5
St. Saviour's, Poplar (Rev. J. Beardall)	42	10	0
St. Paul's, Onslow-square (Rev. H. W. Webb-Peploe) ...	307	8	6
St. Clement Danes (Rev. J. J. H. S. Pennington)	23	0	0
St. Luke's, Westbourne-park	54	7	6
St. Mark's Presbyterian Church, Greenwich	31	19	3
St. Columba's, Notting-hill	23	2	10
Islington Parish Church (Rev. W. H. Barlow)...	20	0	0
St. George's, Perry-hill (Rev. J. H. W. Kane)	30	7	5
Lyndhurst-road Congregational Church, Hampstead ...	73	19	7
Kensington, Allen-street, Congregational Church	75	0	11
St. John's, Lewisham-hill-road	47	17	7
Rectory-place Congregational Church, Woolwich	26	14	4
Willesden Presbyterian Church	37	16	9
St. Mark's, Notting-hill (Rev. W. E. Emmet)	30	3	6
Upton (Baptist) Chapel, Lambeth	25	1	6
Westbourne Park Baptist Chapel	22	17	3
Holy Trinity, Beckenham (Rev. W. H. Latham)	53	2	8
Holy Trinity, Marylebone (Rev. A. J. Robinson)	78	17	0
St. Saviour's, Fitzroy-square (Rev. T. Turner)	30	15	3
St. John's, Redhill (Rev. J. S. M. Gordon)	34	17	0
Christ Church, North Brixton (Rev. W. R. Mowll)	75	13	3
St. Mary's German Lutheran Church, Cleveland-street, Fitzroy-square (Rev. C. Schoell, D.D.)	16	2	6
German Chapel Royal, St. James's (Rev. C. Schoell, D.D.) ...	7	11	0

THE ANNUAL DINNER OF THE EPIDEMIOLOGICAL SOCIETY.

THE members and friends of this society dined together at the Grand Hotel on Friday, the 28th ult. The chair was taken by the President, Mr. Shirley Murphy, and there were present, among others, Sir Walter Foster, M.P., Mr. Christopher Heath, Professor Michael Foster, Sir B. W. Richardson, Professor Clifford Allbutt, Dr. Thorne Thorne, C.B., Dr. Tatham, Dr. Payne, Dr. Parsons, Dr. Klein, Mr. Cope, Professor Sherrington, Dr. Coupland, Dr. Bulstrode, Dr. Whitelegge, Fleet-Surgeon Preston, Brigade-Surgeon Scriven, Mr. E. Gould and Mr. J. A. Redgrave, H.M.'s Inspectors of Factories, Dr. Newsholme, and Dr. Hamer. After the toasts of "The Queen and Royal Family," and of "The Army and Navy," to which Fleet-Surgeon Preston and Brigade-Surgeon Scriven replied, Professor Michael Foster gave the toast of "The Public Health Service," coupled with which were the names of Sir Walter Foster and Dr. Kenwood. In the course of a highly entertaining speech Professor Foster discussed the progress of preventive medicine, and expressed satisfaction at the scientific manner in which the study of epidemiology is being carried on. He also referred in graceful terms to the prominent part which Sir Walter Foster as Parliamentary Secretary of the Local Government Board had taken in public health administration, and to the great services to the State which medical officers of health were rendering throughout the country.

Sir Walter Foster, in replying, referred to the great progress which had been made in the development of the public health administration of the country, and instanced its usefulness in safeguarding the country against cholera. The immunity enjoyed by England had, he was satisfied, led to the services which had protected England being less recognised than they would have been if cholera had obtained a footing in the country. With his friend Dr. Thorne he had, through the completeness of success of their work, been deprived of the credit which might probably have been given them. Throughout the country there had been progress, but nowhere was this more marked than in London, and he complimented the President of the society on the development of the health administration of the London County Council and on the reports which were issued.—Dr. Kenwood, in acknowledging the toast, expressed his appreciation of the work done by the Epidemiological Society, and alluded to the high place which its Transactions occupied in epidemiological literature.

Dr. Thorne Thorne, in proposing "The Health of the Visitors," congratulated the President on the presence of men of great personal distinction, each of whom represented a separate branch of work which was associated in one or another way with epidemiology. The presence of the President of the Royal College of Surgeons of England reminded the members of the great progress which had been made in antiseptic surgery and the improvements which had been effected in the construction and administration of hospitals. The presence of the Regius Professor of Medicine of Cambridge University marked the

sympathy of medicine with the work of the epidemiologist. Professor Michael Foster was an especially welcome guest, for his life had been spent in providing a scientific basis for medicine. The presence of Mr. Cope, the chief adviser of the Board of Agriculture, marked the need which the epidemiologist felt in the association of human and animal pathology with the study of epidemic disease; and of Dr. Tatham, the head of the Statistical Department of the State, of the necessity of using the statistics which he provided, and of submitting to the stern test of figures the work upon which the members of the society were engaged. He commented on the support he had always received from Sir Walter Foster in the performance of his official duties.

Mr. Christopher Heath and Professor Clifford Allbutt replied to the toast. Mr. Heath discussed the examination of medical officers of health and dwelt on the excellence of the examination of the united colleges. Professor Clifford Allbutt, referring to the self-denying labours of the medical profession in preventing disease and in thus depriving themselves of the work upon which they as a profession depended for their livelihood, instanced the work of one whose efforts had resulted in the reduction of disease, and especially the abolition of enteric fever from the locality in which he practised, and the consequent reduction of his income.

The President, in proposing the toast of "The Epidemiological Society," commented on the fact that the number of persons who associated themselves for the study of epidemic disease had always been small, but, from the foundation of the society, among those who took part in the proceedings were some of the best thinkers and most distinguished members of the profession, and he alluded to the loss the society had recently sustained by the death of a beloved leader whose own work had largely added to our knowledge of epidemic disease. He then referred to the history of the study of epidemiology, of which the published proceedings of the society were an index. The beginnings of this study were to some extent gropings in the dark, and theories were often formulated which had to give way to the teaching of the facts which were observed. Theory and fact were sometimes struggling against each other, but by degrees the facts were accepted. Scientific epidemiology had thus come into existence and paved the way to a better knowledge of the diseases which attack communities.

Sir Benjamin Ward Richardson, in proposing "The Health of the President," referred to the work in London in which he was engaged, and congratulated him on his recognition of the need for sound and scientific knowledge to be made the basis of the health administration of London.

After a suitable acknowledgment by the President the society adjourned.

Public Health and Poor Law.

LOCAL GOVERNMENT DEPARTMENT.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Leicester Urban Sanitary District.—Dr. Joseph Priestley in his current annual report has continued his interesting observations on the distribution of enteric fever in Leicester, which he commenced in his 1893 report, and it appears that the 1894 experience led to much the same conclusions as did that of 1893—i.e., it showed a greater incidence of the disease on houses provided with pails, privies, or water-closets with ashpits than upon those provided with water-closets and bins. We imagine, however, that there are some who would object to the classification of houses furnished with waterclosets and ashpits with those provided with pails and privies. Dr. Priestley also gives an account of a localised outbreak of enteric fever comprising 47 cases and thirty-seven houses, which he considered due to the interchange of infected pails. In this account two series of cases are given; in the one, no less than 7 cases were, Dr. Priestley thinks, directly infected from the first case; in the other, 8 cases of the disease were apparently contracted either directly or indirectly from the first. Of the total thirty-seven houses invaded in the outburst 31 per cent. had pails and 18·9 per cent. waterclosets. Dr. Priestley, after discussing the causes to which outbreaks of enteric fever are usually attributable, considers that a thesis of typhoid fever infected pails is the one which best explained the distribution of the disease. Apart from the disuse of pails altogether—which is the course Dr. Priestley advocates—or the return of each pail to the house from which it was taken, it is difficult to devise a remedy for the risks which the pail system would seem to incur. Obviously there must often be in a large town cases of unrecognised enteric fever, and probably in those instances where diarrhœa is a prominent symptom there is considerable danger of infection occurring before the nature of the disease is recognised. As regards the distribution of typhoid fever on pervious and impervious formations, Dr. Priestley observes that the figures for 1894, like those for 1893, show that the greatest incidence of the disease occurred on gravel and sand and the least on clay. The experience as regards diarrhœa in Leicester during 1894 fully bears out Dr. Ballard's classical researches on the relation between the prevalence of this disease and the temperature of the earth at a depth of 4 ft. The registered vaccinations in Leicester for the year 1894 show a considerable falling off on those of the previous year, the respective numbers being 133 and 249. As, however, Dr. Priestley observes, the Vaccination Acts are practically a dead letter, the number of certificates received by the vaccination officer is really little or no criterion of the actual number of vaccinations performed, and many persons have apparently had their children vaccinated by private practitioners. In commenting upon the high death-rate among illegitimate infants Dr. Priestley suggests that the sanitary committee should keep a register of the illegitimate children born in the town, so that any suspicious cause of death might be inquired into; and he also reports that the percentage of uncertified deaths in Leicester has been increasing, while inquests seem proportionately to be decreasing. The proper certification of all deaths should, he observes, be enforced by law. In that section of his report which refers to the fever hospital Dr. Priestley draws attention to the fact that the present small-pox hospital is only a temporary building, providing a maximum accommodation of twenty beds, and he points out that no trouble should be spared to find a suitable site for a proper small-pox hospital well outside the town, so that in the event of small-pox appearing again it may not be necessary to discharge the scarlet fever patients. Dr. Priestley alludes, too, to the necessity of providing a new fever hospital, one that shall be worthy of "a town that, in other municipal and sanitary matters, generally takes the lead." In Part III. of his report the vital and mortal statistics of Leicester are dealt with, but space prevents our touching upon them save to state that the general and zymotic death-rates recorded during 1894 were the lowest chronicled in the annals of the borough.

Eastbourne Urban Sanitary District.—Dr. W. G. Willoughby, in submitting his first annual report as medical officer of health of Eastbourne, gives a detailed account of the borough, describing its site, geology, water-supply, &c. He also enters thoroughly into the age and sex distribution of the population. The water-supply is, Dr. Willoughby states, of excellent quality, save for its hardness, and to remedy this defect he advises its treatment by some such process as the "Porter-Clark." Dr. Willoughby also observes that charges for water-supply to dwelling-houses should be inclusive, so as to embrace baths. In Eastbourne these very necessary fittings are treated as luxuries, and doubtless the visitors to Eastbourne have to pay their share of the charges. The isolation of infectious disease is increasing in popularity in Eastbourne, and the percentage of notified cases isolated during the past three years has been respectively 56·9, 64·5, and 72·9.

Kingston-upon-Thames Urban Sanitary District.—Mr. Beale Collins devotes a considerable portion of his report for 1894 to a discussion of the desirability or otherwise, from a public health standpoint, of the proposed extension of the borough so as to embrace the ecclesiastical parishes of Kingston and Ham. Without following Mr. Collins step by step through his interesting observations, it may be stated that he considers the proposal would tend to produce what he terms a normal community in the matter of age, sex, and class distribution, and that, as far as drainage is concerned, "there is nothing to be said against extension and everything in its favour"; while in regard to isolation accommodation and the control of infectious disease generally, Mr. Collins thinks that much good would result.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN thirty-three of the largest English towns 6166 births and 3394 deaths were registered during the week ending

June 29th. The annual rate of mortality in these towns, which had been 15·4 and 16·2 per 1000 in the two preceding weeks, further rose last week to 16·7. In London the rate was equal to 16·9 per 1000, while it averaged 16·5 in the thirty-two provincial towns. The lowest rates in these towns were 9·6 in Brighton, 9·9 in Derby, 11·5 in Huddersfield, and 11·6 in Portsmouth, Leicester, and Preston; the highest rates were 19·2 in Bolton, 19·4 in Burnley, 21·0 in Salford, 22·8 in Gateshead, and 25·7 in Liverpool. The 3394 deaths included 493 which were referred to the principal zymotic diseases, against 399 and 400 in the two preceding weeks; of these, 177 resulted from diarrhœa, 140 from measles, 59 from whooping-cough, 55 from diphtheria, 32 from scarlet fever, 29 from "fever" (principally enteric), and 1 from small-pox. The lowest death-rates from these diseases were recorded in Brighton, Swansea, Nottingham, Derby, and Wolverhampton; and the highest rates in Cardiff, Leicester, Salford, Liverpool, and West Ham. The greatest mortality from measles occurred in West Ham, Plymouth, Cardiff, Bolton, Manchester and Newcastle-upon-Tyne; from scarlet fever in Burnley; from "fever" in Huddersfield; and from diarrhœa in Croydon, Leicester, Salford, and Preston. The mortality from whooping-cough showed no marked excess in any of the large towns. The 55 deaths from diphtheria included 38 in London, 3 in Liverpool, 2 in West Ham, 2 in Portsmouth, and 2 in Birmingham. One fatal case of small-pox was registered in London, but not one in any of the thirty-two large provincial towns. There were 34 cases of small-pox under treatment in the Metropolitan Asylum Hospitals and in the Highgate Small-pox Hospital on Saturday last, June 29th, against 23, 19, and 22 at the end of the three preceding weeks; 25 new cases were admitted during the week, against 5, 2, and 8 in the three preceding weeks. The number of scarlet fever patients in the Metropolitan Asylum Hospitals and in the London Fever Hospital, which had been 1589, 1637, and 1732 on the three preceding Saturdays, had further risen to 1894 on Saturday last, June 29th; 319 new cases were admitted during the week, against 179, 199, and 251 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 152 and 186 in the two preceding weeks, declined to 160 last week, but were 45 below the corrected average. The causes of 38, or 1·1 per cent., of the deaths in the thirty-three towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Portsmouth, Bristol, Cardiff, Leicester, Sheffield, and in fifteen other smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Nottingham, Preston, and Hull.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had been 17·1 and 19·4 per 1000 in the two preceding weeks, declined again to 19·2 during the week ending June 29th, but exceeded by 2·7 per 1000 the mean rate during the same period in the thirty-three large English towns. The rates in the eight Scotch towns ranged from 14·2 in Leith and 15·3 in Paisley to 20·9 in Greenock and 27·4 in Perth. The 555 deaths in these towns included 48 which resulted from diarrhœa, 14 from measles, 9 from whooping-cough, 3 from diphtheria, 3 from "fever," 1 from scarlet fever, and not one from small-pox. In all, 78 deaths were referred to these principal zymotic diseases, against 58 and 76 in the two preceding weeks. These 78 deaths were equal to an annual rate of 2·7 per 1000, which was slightly above the mean rate last week from the same diseases in the thirty-three large English towns. The fatal cases of diarrhœa, which had been 25 and 26 in the two preceding weeks, further rose to 48 last week, of which 29 occurred in Glasgow, 6 in Dundee, and 4 in Aberdeen. The 14 deaths referred to measles corresponded with the number in each of the two preceding weeks, and included 6 in Glasgow and 3 in Paisley. The fatal cases of whooping-cough, which had increased from 11 to 20 in the three preceding weeks, declined again to 9 last week, of which 6 occurred in Glasgow and 2 in Edinburgh. The deaths from diphtheria, which had been 3 and 4 in the two preceding weeks, were 3 last week, all of which were recorded in Glasgow. The 3 deaths referred to "fever" were within 1 of the number in the preceding week, and included 2 in Glasgow. The fatal case of scarlet fever occurred in Edinburgh. The deaths referred to diseases of the respiratory organs in these towns, which had been 87 and 94 in the two preceding weeks, further rose to 99 last week, and exceeded by 18 the number in the corresponding week of last year. The causes of 25, or nearly 5 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 23·1 and 20·1 per 1000 in the two preceding weeks, rose again to 22·4 during the week ending June 29th. During the thirteen weeks of the quarter ending on Saturday last the death-rate in the city averaged 27·3 per 1000, the rate during same period being 16·7 in London and 18·8 in Edinburgh. The 150 deaths registered in Dublin during the week under notice showed an increase of 15 upon the number in the preceding week, and included 9 which were referred to the principal zymotic diseases, against 8 and 16 in the two preceding weeks; of these, 5 resulted from diarrhœa, 3 from whooping-cough, 1 from "fever," and not one either from small-pox, measles, scarlet fever, or diphtheria. These 9 deaths were equal to an annual rate of 1·3 per 1000, the zymotic death-rate during the same period being 3·2 in London and 1·3 in Edinburgh. The 5 fatal cases of diarrhœa exceeded the number in any recent week. The deaths referred to whooping-cough, which had been 3 and 1 in the two preceding weeks, rose again to 3 last week. The mortality from "fever" corresponded with that recorded in the preceding week. During last quarter 23 fatal cases of small-pox were registered within the city, against 78 in the first quarter of this year. The 150 deaths registered in Dublin last week included 26 of infants under one year of age, and 32 of persons aged upwards of sixty years; the deaths of infants corresponded with the number in the preceding week, while those of elderly persons showed a slight further increase upon recent weekly numbers. Only one inquest case and no death from violence was registered; and 51, or rather more than a third, of the deaths occurred in public institutions. The causes of 16, or nearly 11 per cent., of the deaths in the city last week were not certified.

THE SERVICES.

MOVEMENTS OF THE MEDICAL STAFF.

BRIGADE-SURGEON-LIEUTENANT-COLONEL GREENHILL, retired pay, has been transferred from Lincoln to Guernsey. Surgeon-Major Morgan has been appointed to Woolwich, Surgeon-Major Maclean to Chatham, and Surgeon-Captain Watson to Glasgow. Surgeon-Captain Johnson has been granted sick leave to England from India. The following officers have completed a course of instruction in meat inspection at Edinburgh:—Surgeon-Majors O'Sullivan and Dick, Surgeon-Captain Kiddle, and Surgeon-Lieutenants Barnett and Master. The following officers have been placed under orders to attend a course at Edinburgh:—Surgeon-Lieutenant-Colonel Slaughter, Surgeon-Majors Robinson and Jencken, and Surgeon-Captains Cardew and Davidson. Surgeon-Captain Trask has been selected for duty with the Egyptian army.

ARMY MEDICAL STAFF.

Surgeon-Lieutenant Herbert C. French to do duty with the Coldstream Guards as an attached officer, vice Surgeon-Captain M. T. Yarr, who vacates his post on appointment as physician to the Crown Prince of Siam.

INDIA AND THE INDIAN MEDICAL SERVICES.

Surgeon-Major R. J. Baker (Bombay), Residency Surgeon and *ex-officio* Assistant to the Political Resident in Turkish Arabia, is appointed to officiate as Medical Officer of the 2nd Regiment Central India Horse, and of the Western Malwa Political Agency during the absence on leave of Surgeon-Captain C. M. Moore. Surgeon-Captain A. R. S. Anderson, Surgeon-Naturalist of H.M.'s R.I.M.S. steamer *Investigator*, is appointed to officiate as Superintendent of the Indian Museum during the absence of Surgeon-Captain A. W. Alcock, who accompanies the Pamir Commission as Surgeon-Naturalist. Surgeon-Captain J. B. Smith has delivered over charge of the Shikarpur Prison. The services of Surgeon-Captain W. Molesworth and Surgeon-Captain C. Donovan are placed temporarily at the disposal of the

Government of Madras. The services of Surgeon-Major E. F. H. Dobson are replaced at the disposal of the Government of India, Home Department. Surgeon-Colonel H. Cook takes over the duties of Principal Medical Officer, Bombay Command from Surgeon-Colonel C. A. Atkins, A.M.S. Surgeon-Major C. L. Swaine proceeds to England on the recommendation of a medical board in anticipation of the leave which will be hereafter granted to him by the Government.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain Arthur Taylor Wear, M.D., 1st Newcastle-on-Tyne Volunteer Artillery (Western Division, Royal Artillery), to be Surgeon-Major. Surgeon-Lieutenant John Hugh Maclean, F.R.C.S. Edin., 2nd Volunteer Battalion the Sherwood Foresters (Derbyshire Regiment), to be Surgeon-Major.

VOLUNTEER CORPS.

Artillery: 2nd Middlesex: Surgeon-Lieutenant J. H. Gibson, M.D., resigns his commission. 1st Cornwall (Duke of Cornwall's) (Western Division, Royal Artillery): Surgeon-Captain W. Mason to be Surgeon-Major. *Royal Engineers:* 1st Gloucestershire: William Balfour Fergusson, M.D., to be Surgeon-Lieutenant. *Rifle:* 4th Volunteer Battalion the Hampshire Regiment: Surgeon-Lieutenant E. Roe resigns his commission. 1st Volunteer Battalion the Royal Scots Fusiliers: The under-mentioned Surgeon-Majors to be Surgeon-Lieutenant-Colonels: W. Wilson, M.D., and W. Frew, M.D. 6th Volunteer Battalion the Gordon Highlanders: James Taylor, M.D., to be Surgeon-Lieutenant. 1st Volunteer Battalion the Highland Light Infantry: Surgeon-Captain H. St. Clair Gray, M.D., resigns his commission.

THE PARKES MEMORIAL PRIZE FOR 1894.

According to the *Pioneer Mail* of June 12th last, we have to congratulate Surgeon-Major Donald Ross, Madras Medical Service, on having won the Parkes Memorial Prize for his essay on "Malarial Fevers: their Causation and Prevention." We learn, moreover, from the same source that the Maharajah of Patiala, acting on the suggestion of Surgeon-Major Owen, his medical adviser, has applied for the services of a medical officer to carry out an investigation into the fevers which prevail in his State during the rains, and that the Maharajah has named Surgeon-Major Ross for the work. The Durbar are prepared to bear all the expenses of the inquiry, and it is to be hoped that the Indian Government will accede to the Maharajah's request. Fever is of all the diseases of India that which prevails the most extensively and causes the largest mortality among the natives of that country, especially when the soil of certain districts becomes waterlogged. There are several questions of a scientific and bacteriological character respecting the micro-organism of malaria in India requiring thorough investigation, and Surgeon-Major Ross having made a special study of the subject, in addition to having gained the Parkes Memorial Prize, seems to be eminently qualified to undertake such an investigation.

THE MEXICAN ARMY MEDICAL DEPARTMENT.

The *Army and Navy Gazette* says: The Mexican Army boasts of a medical department which is clearly sufficient for the needs of the sick soldiers. The medical officers consist of one brigadier-general, head of the department; one brigadier-general, chief inspector; two colonels, seventeen lieutenant-colonels, fifty-four majors, and twelve lieutenants on probation. Apothecaries: One lieutenant-colonel, two majors, two first-class captains, and five second-class captains. Administrative hospital officials: One lieutenant-colonel, four majors, and five second-class captains. Commissaries: One first-class captain, four second-class captains, and five lieutenants. Medical Staff Corps: One captain, three lieutenants, three sub-lieutenants, sixteen first-class sergeants, twenty-three second-class sergeants, thirty-nine corporals, and one hundred and sixty-eight privates. These figures show 124 commissioned officers to a strength of 246 rank and file.

"THE 'KISSING CASE.'"

The case which has been so frequently alluded to and commented upon by the Anglo-Indian press under the above heading will be in the recollection of our readers. A statement has recently appeared in some of the Madras papers that Surgeon-Major Clarence Smith will be reinstated in the Indian Medical Service provided that he consents to be tried by court-martial and is acquitted by the court of the charges brought against him. Whether this rumour be well or ill founded is more than we can say, but we see no reason for altering the opinion that we formed from the narrative of facts given at the time in the press—viz., that Surgeon-Major Smith had, under all the circumstances, been very severely treated, and that there were, at any rate, grounds for having the matter more fully investigated and reconsidered.

THE UNHEALTHINESS OF OOTACAMUND.

A paragraph in the *Times of India* of the 14th ult. refers to the very unhealthy condition of this favourite station and health resort of the Madras Presidency. For some time past there has been a good deal of sickness in this station, but during the present season the number of sick people at Ootacamund is said to be unprecedented. The prevailing diseases are stated to be throat affections, low forms of fever, and typhoid fever, pointing to the existence of such causes as defective drains and bad water-supplies. Several cases of sickness have occurred at Government House as well as at other parts of the station, and it is alleged that some of the visitors have preferred to return to the plains rather than incur the risk of contracting disease by remaining at Ootacamund.

FEVER AT MOOLTAN.

According to the Indian papers enteric fever has been unusually prevalent of late at this station. Several fatal cases have occurred at the station hospital. The men belonging to the new draft have been sent up to the hills as a precautionary measure and in order to gradually acclimatise them to an Indian climate.

EXAMINATION FOR STAFF-SURGEONS.

An examination of naval surgeons who are eligible to qualify for the rank of staff-surgeons will be held at Haslar Hospital on the 10th inst. Notice should be sent to the Inspector-General not later than to-day (Saturday), July 6th.

SURGEON-MAJOR ROBERTSON.

We are very glad to learn that Surgeon-Major Robertson, who was at the time of the latest intelligence from India staying at Simla, has quite recovered from the wound he received at Chitral.

CALCUTTA.

The Calcutta death-rate, although it has decreased, still remains high—11 per 1000 above the average. Fevers, small-pox, and cholera are unduly prevalent.

DEATH IN THE SERVICES.

We regret to have to announce the death of Surgeon-Captain George Nelis, A.M.S., attached to the Poona District at Bombay, on the 9th ult.

Two officers and eighty-nine non-commissioned officers and men of the Hants Company of the Militia Medical Staff Corps left Aldershot on the 5th inst. for the annual training at Netley.

Correspondence.

"Audi alteram partem."

IS METEOROLOGY A SCIENCE?

To the Editors of THE LANCET.

SIRS,—I have not seen the article in the *Edinburgh Review*, but I have read your interesting notice of it, in which the above question is propounded. As you justly say, if facts be accurately observed and recorded, leading to certain conclusions however slight, the subject investigated deserves to be called a science. At the same time meteorology appears to stand on altogether a different footing from the various branches of scientific inquiry in which mankind is engaged. In every one of these the question to be investigated, whether in the organic or inorganic world, has reference to the position of the subject in relation to its environments. Whether this be an inert mass of rock or an organic substance we seek for the influences acting from without which affect its constitution. We never suppose that a spontaneous change can occur in anything whilst the surrounding conditions remain the same. For this reason, in order to discover the nature of any substance, we submit it to experiments—that is, put it under new conditions.

We know nothing of the characters of objects in this world as existing *per se*, as these depend largely on their surroundings. We ourselves as human beings could have no separate

existence from the earth, for, if the normal human body implies the possession of various organs with their tubes and contents, then the lungs with their tubes are included in the idea of a perfect man, and yet the contents of these tubes—the air—are manufactured outside ourselves.

Now as regards meteorology we use different language, we speak of changes originating within the globe itself. It may be true that all that is said about Polar ice and the Gulf Stream is correct, but the question is, Why should the wind blowing from the north into a warmer region produce a cyclone at one time rather than another? Why were the conditions altered which caused it? If we are speaking of any object on the globe and we observe that changes are occurring in it we look for the causes in its environments; we never believe in the possibility of a change without the operation of an external cause. It may be true that the earth is a globe of fire and that we inhabit only a thin cooled crust, and therefore internal conditions are ever present to produce a change, but if we compare the earth as a whole with portions of it, such as we deal with in scientific inquiry, we should naturally look to the earth's environments as the causes of change; now the only variable ones are the position of the planets and the heat of the sun. As regards the former, I believe observers have discovered that their position produces no influence on the earth, and this leaves the varying heat of the sun as the only known external factor to affect us. As far as we know, the conditions of the earth in space are always the same. We know the inclination of the earth's axis, and we should conclude that the seasons would be invariably the same, together with the trade winds and certain other constant phenomena. Why there should be the slightest difference in corresponding days of different years is the puzzle. The causes of uniformity are clear, those of dissimilarity are obscure. My point is that all objects in the world are dependent for their characters, in an unknown measure, on their environments, and that all scientific inquiry has reference to the altered condition of these environments and the observations of the new phenomena thereby produced. Now as regards the earth as a whole we know nothing of its environments (and perhaps never shall), and therefore we cannot study the changes constantly occurring on its surface in the manner we do in various branches of science. It, therefore, may be well asked, Is meteorology in the true sense a science?

I am, Sirs, yours faithfully,

Grosvenor-street, June 29th, 1895. SAMUEL WILKS.

"THE DISCOVERY OF ANÆSTHESIA."

To the Editors of THE LANCET.

SIRS,—As it is a question of considerable historic interest to be settled, I beg leave to trespass a little further on your space to reply to the letter of Mr. W. Rogers Williams in THE LANCET of May 4th, in which he urges the claim of Morton as being the discoverer of anæsthesia by means of ether for prolonged surgical operations. Without doubt there is a vast difference between the discoverer or inventor and the one who popularises or makes widely known the discovery or invention. That has often been demonstrated in the cases of our most noted inventors. The original brain-work generally receives neither the credit nor emolument due to its genius. I take up the historical facts in Mr. Williams' letter and appeal to any fair-minded person to say whether or not all of the credit for the discovery of the anæsthetic properties of nitrous oxide gas is due to Sir Humphrey Davy? That this discovery did not excite general attention resulting in the extensive practical use of gas as an anæsthetic was simply owing to the general stupidity of mankind at that time. Does Wells deserve the name of discoverer of this application of the gas in surgery? He may have made the remark, "A new era in tooth-pulling," after he came from under the influence of the anæsthetic, but Sir Humphrey Davy had cut his wisdom tooth painlessly by this means forty-four years before that time, and two years before that Long of Georgia had done his immortal operation under ether narcosis.

As for Wells having "thoroughly grasped the anæsthetic idea," and thus being worthy of laud, it may be stated that the "anæsthetic idea" had been evolved long before Wells' sojourn on our planet; alcohol, opium, hemp, and mandragora were well-known anæsthetic agents, and the "memorable sentence" of our opportune friend, Sir Humphrey Davy, shows plainly enough that he too understood quite well the idea of anæsthesia. It is impossible, likewise, that any man of average intellectual power should fail to appreciate the "far-reaching importance" of a good practical anæsthetic. Nor is the matter of publication in some journal a criterion in discovery, nor should such a standard ever be elevated.[1] Facts are facts whether they be published or not, and in this case we have certain plain cold facts that would tickle the palate of Mr. Gradgrind, were that gentleman capable of any feeling. Granted that "publicity" be the "touchstone of invention," I have proceeded to pour a little of the reagent of truth upon its marred surface, and lo! the tiny glittering streak of precious history appears, as the marks of the base-metal simulations are dissolved. In this metaphor let us put far from us the notion that the touchstone should be anything but a faithful touchstone, giving true reactions. No just man will admit, however, that "publicity" in the sense of energetic publication or widely diffused statements is any proof of right. Too much injustice has already been done by thus rendering imposition easy.

Facts may be piled up as high as the sky as to what Wells did, what Jackson did, and what Morton did, but the plain, unvarnished truth is that Long did the first well-authenticated surgical operation under ether, and that operation was performed in 1842, two years before Wells' tooth was pulled under gas, four years before Morton extracted Eben Frost's tooth by means of ether anæsthesia. It is to be hoped that the gyrations of Wells, Morton, and Jackson will not confuse the perception of the unprejudiced bystander. It is curious to observe the persistent indifference to Long's rights manifested by the standard histories of this subject. And I shall be happy if I live to see his name[2] taken from the depths of fast-thickening obscurity and placed upon its proper ledge, so that the waves of oblivion shall not close over it. It is left to the world and its posterity to measure out the amount of praise to be bestowed upon the discoverer of ether narcosis; nor is it my part to urge that one jot of rightful meed should be taken away. I call for exact differentiation. Give the discoverer his praise and the promoter or populariser his credit, to each such as may be his due. Giving heed to the value of your space and time, I shall not discuss this matter in the future unless, Sirs, you honour me with the signal for another tilt. I shall be glad to see a reply from Mr. Williams, however, as I feel fairly confident that he, at least, will "e'en gang his ain gait" regardless of what has been said to change the general opinion in this matter. With many thanks for your kindness,

I am, Sirs, yours very sincerely,

Lynchburg, Virginia, May 18th, 1895. S. P. PRESTON, M.D.

"THE REMUNERATION OF MEDICAL OFFICERS TO PROVIDENT ASSOCIATIONS, CLUBS, ETC."

To the Editors of THE LANCET.

SIRS,—As this question is in one form or another engaging considerable attention in the profession, it is most important that we should be accurate in our statements regarding it. In THE LANCET of June 22nd Dr. Paget Thurstan makes an elaborate calculation, based upon an assumption of one month's sickness per head per annum, which he states that he has taken from Mr. Neison's statistics. I fear that our great friendly societies would be in a bad way if this assumption were correct. The fact is, Dr. Thurstan has confused the "average duration of sickness per member sick" with the "average number of days' sickness per member per annum," which is, of course, a very different thing. The figure for the latter is as nearly as possible nine days (*vide* Newsholme). In a provident society of 1000 members, each paying 4*s.* per annum, the medical officer would receive £200 per annum. He would have to attend 9000 days' sickness, or 9000 ÷ 365 = 25 members constantly sick; this gives him

[1] In 1668 it became known to Halley, the eminent mathematician, that (Sir) Isaac Newton had discovered the principle of reciprocal attraction gravity which regulated the planetary movements, but such was his modesty that Halley could with difficulty induce him to claim the great discovery, afterwards elaborately embodied in the "Principia."

[2] Dr. Crawford W. Long was not an "English physician." He was born in Danielstown, Madison County, Georgia, Nov. 1st, 1815; died in Athens, Georgia, June 16th, 1875. Educated at Franklin College, Pennsylvania, 1835; University of Pennsylvania, 1839. Practised in Jefferson County, Georgia, and in 1851 moved to Athens, Georgia.—Appleton's Encyclopædia of American Biography.

£8 per annum for each such member. In my experience, however, of a mixed provident society—containing men, women, and children—I find that nine days' sickness per member per annum is an excessive estimate, and that six days is nearer the mark—the reason being that in the large friendly societies (in which the members receive sickness pay) it is seldom the case that a man returns to work directly he is fit to do so; in fact, during the last third of his nominal sickness he often has no medical attendance at all. I quite agree with Dr. Thurstan "that it is possible for the profession to form an association amongst themselves," as this has already been done in many places, but that a shilling per member per month will be paid by the British artisan is an expectation which will not be realised for many years. We have to fight the lay societies, run on commercial lines, who want to "sweat" us for their own profit; and in order to do this we must accept the current rates, gradually raising them after we have obtained control.

I am, Sirs, yours faithfully,

Wandsworth, S.W., July 1st, 1895. W. G. DICKINSON.

ROYAL FREE HOSPITAL: THE OPENING OF THE NEW BUILDINGS.

To the Editors of THE LANCET.

SIRS,—As President of the Royal Free Hospital I have the honour to announce that their Royal Highnesses the Prince and Princess of Wales have graciously consented to open the new front building of the hospital on Monday, July 22nd.

The cost of the new buildings and of various other improvements which have been carried out during the past two years amounts to £30,000, towards which sum £24,000 has already been raised.

I now ask your favourable consideration to the appeal of the committee, feeling assured that I may rely upon your generosity to assist them in obtaining the sum of £6000 which is still required to enable them to carry on the benevolent work of the hospital free from debt.

I have the honour to be, Sirs, your obedient servant,

British Embassy, Paris, July 1st, 1895. DUFFERIN AND AVA.

DETENTION IN THE OUT-PATIENT DEPARTMENT.

To the Editors of THE LANCET.

SIRS,—Your interest in the sick poor attending our London hospitals, and your efforts for the success of the annual collections on Hospital Sunday are so well known that I feel sure I may rely upon your sympathy for that vast number of out-patients who daily throng the hospitals. In the *Graphic* of June 15th, beneath a picture faithfully representing the common spectacle at the receiving-rooms of most of the large hospitals, the following occurs: "In the waiting-room, depressing and rather murky looking in spite of its large area of window-glass and its ostentatious air of being well scrubbed every morning, the patients sit awaiting their turn to see the surgeon. They are of many ages and of one class; but the characteristic which is most strikingly common to all is their patience and their quietude." It is the experience of the parochial clergy that the weary hours of waiting to see the physician, or to obtain the medicine after the interview, are a cause of intense mental, and not infrequently, of physical suffering to the patients. Sometimes a mother will have to wait for hours with a sick child in a vitiated atmosphere, and amid most painful surroundings. For many delicate invalids suffering is prolonged in the melancholy waiting-room for four, six, or even eight hours waiting the convenience of surgeons, physicians, and apothecaries. Some come from a distance, while others have to give up a whole day's work and lose a day's wages for an interview of a few minutes. Why has there been so little reform in this direction? Is it that the physicians and surgeons are in league to resent the smallest interference? Or is it that governors or secretaries will not attend to details so minor in their estimation, so important in the eyes of the sufferer and his friends? We clergy are often called upon to defend in public, or in private, the hospital system from the attacks of antivivisectors, sectarians, and ignorant or prejudiced persons, but this is a grievance which has no defence, and will, if continued, alienate the best supporters of our hospitals. Will the authorities consider this matter from the patient's point of view and arrange for patients to attend in batches at various and fixed hours throughout the day? There can be no difficulty in arranging this by means of different-coloured letters for the unendowed hospitals with different hours appointed, and for the open hospitals more receiving hours being fixed, or different hours arranged for the various London districts.

I am, Sirs, yours faithfully,

St. Philip's Vicarage, Sydenham. A. EDMUND KING.

"THE CAIRO LUNATIC ASYLUM."

To the Editors of THE LANCET.

SIRS,—In common with all who are interested in the medical and sanitary prosperity of Egypt, I am delighted to learn that at last a specialist in lunacy has been placed in charge of the Cairo Asylum, and have no doubt that before Dr. Warnock's two years have elapsed the advantages resulting from the appointment will have become so evident that it will be made permanent.

Notwithstanding her population of seven or eight millions, Egypt possesses one single establishment only for the reception of the insane of all classes; and hitherto, for lack of a competent physician, there has been no attempt to treat the demented patients in accordance with modern scientific methods; but you will, I trust, allow me to say that as soon as the asylum was placed under British control in 1884 an endeavour was made to find occupation for the inmates, so that they should not be obliged "to sit idly on their beds all day." Dr. Sandwith and Dr. Keatinge commenced the reform by instituting workshops on as large a scale as was practicable, and in my time lunatics were "engaged in the garden, laundry, and kitchen," while a few worked as tailors and carpenters, and a good many as matmakers, the latter industry bringing in a small revenue which was expended, by special permission of the Finance Committee, on the purchase of tobacco and other luxuries. Of course, the patients could not be compelled to work unless they chose, and in spite of the allurements of cigarettes and coffee it was impossible to induce the majority to do anything. Many of them, to the best of my belief, were simply incurably lazy, preferring a life of well-fed idleness in prison to hard labour and scanty food outside. I recollect the man who posed as the Mahdi, but never heard of his attainments as a gardener. It will be interesting to learn later Dr. Warnock's views regarding the cause of the wonderful freedom from mental derangement enjoyed by the Egyptian people. There is probably no country in the world where the insane are relatively so infrequent.

I am, Sirs, yours faithfully,

St. John's, Woking, July 1st, 1895. H. R. GREENE.

"CHOREA GRAVIDARUM."

To the Editors of THE LANCET.

SIRS,—I am interested to see from the summary of Dr. R. C. Buist's paper on Chorea Gravidarum, reported in THE LANCET of June 22nd, that the exaggerated statements regarding the mortality of this disease are being corrected. In a paper on this subject published in vol. xxxiii. of the Transactions of the Obstetrical Society of London, 1892, I drew attention to this point, showing that the chief reasons for these conflicting statements seem to be due (1) to the fact that only the severe cases are published, and (2) to the small number of authentic published cases from which conclusions may be drawn. With regard to the causation of maternal deaths, it is necessary to recollect that, owing to the cachectic state of the system, delivery either at term or prematurely is prone to be attended by additional risks, and more liability to septicæmia. The extreme exhaustion which takes place in severe forms of the disease leads to death before the fœtus is delivered. This is brought about by the anæmia, the rapid emaciation occurring in some cases, the intensity of the movements, and in addition the loss of sleep wearing out the already partially exhausted nervous system. In the paper mentioned the indications given for the induction of premature labour are these: (1) where the mother's system is showing signs of exhaustion from the intensity of the movements and the deficiency of sleep, and where a continuance of the pregnant state is dangerous; (2) where mania or a serious mental affection exists; and (3) where grave complications such as heart disease exist. When the literature of the subject is examined so many cases are found described as chorea

gravidarum which have no resemblance to the true disease that it would be well for those who are fortunate enough to meet with examples of this malady to publish their cases fully. I have now seen twelve cases of chorea during pregnancy, all of whom recovered. The recurrence of chorea in subsequent pregnancies appears to resemble ordinary chorea in that relapses may or may not be more severe than the first attack. If chorea has occurred during childhood it is more apt to appear in successive pregnancies, and the younger the patient is during the first pregnancy the greater the liability to recurrence.

I am, Sirs, yours faithfully,

F. J. MCCANN.

Welbeck-street, Cavendish-square, W., June 27th, 1895.

"IN THE MATTER OF MR. T. R. ALLINSON."

To the Editors of THE LANCET.

SIRS,—Your report of the case before Mr. Curtis Bennett is so erroneous in view of the shorthand notes before me that I hasten to correct it, with an intimation that the shorthand transcript can be seen at my office. The magistrate held that Mr. Allinson was never entitled to use the letters of L.R.C.P. without the addition of E. or Ed. for Edinburgh, and that L.R.C.P. could in law be used for London only, and on this fined Mr. Allinson. Mr. Muir Mackenzie signified his agreement with Mr. Allinson's counsel (Mr. H. S. Schultess Young) that a medical man's name being removed from the Register did not interfere with his right to practise, and this fact has been expressed by Mr. Justice Matthews in Allbutt's case and Lord Justice Lopes in a subsequent action. The point practically decided by the magistrate was that L.R.C.P. meant of London only, and that a medical man using these letters may be convicted unless he has the London diploma or writes E., Ed., or Edinburgh after them. I venture to think this point is of general interest to the profession, and shall be obliged by your inserting this letter in your next issue. I am, Sirs, yours truly,

B. ALABONE CHEVERTON,
Solicitor for Mr. Allinson.

Essex-street, Strand, W.C., July 2nd, 1895.

DEATHS UNDER ANÆSTHETICS.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of June 29th one of your Irish correspondents relates a case of death occurring under chloroform in a patient suffering from empyema. I would suggest that, for incision and drainage of the pleural cavity in cases of empyema where the heart is so much displaced by the effusion that syncope is very liable to suddenly occur, a local anæsthetic is advisable. I have repeatedly seen large empyemata freely opened and drained, the skin over the line of incision having been previously frozen with ethyl chloride or anestile. The operation was done in the usual way and a large drainage-tube introduced. The patient from first to last did not complain of pain, nor were there any signs of shock. The operation of thoracoplasty, of course, requires a general anæsthetic, but as it is not an urgency operation there is usually time for the patient's general condition to be so far improved that a general anæsthetic can be better borne.

I am, Sirs, yours truly,

J. H. MARSH, M.R.C.S., L.R.C.P.,
Senior House Surgeon, the Infirmary, Macclesfield.

June 29th, 1895.

"THE MISUSE OF HOSPITALS."

To the Editors of THE LANCET.

SIRS,—As the point raised by Mr. Biddle is important, it may be well to state that our *Hospital Sunday Supplement*, which he quotes, deals with patients, not with attendances. Thus the tables for 1894 were prepared carefully by the authorities of the Hospital Sunday Fund, relate only to patients, and show that 1,383,634 distinct patients were treated in 1894 at the institutions whose names are given. The figures quoted by the preachers are as precise and accurate as it is possible to make them. They have been compiled from official sources, and the detailed tables are in our possession. Something will have been gained by their publication if the medical profession can be got to realise that, including the endowed hospitals, 1,695,276 actual patients found their way to the hospitals and institutions in 1893, all of whom received some kind of treatment. The only qualification of these figures that we know of is the possibility that in some cases the same patient may have attended at more than one hospital during the year.

I am, Sirs, your obedient servant,

THE EDITOR, *The Hospital*.

Strand, W.C., June 28th, 1895.

"DIFFICULTIES UNDER THE INFECTIOUS DISEASE (NOTIFICATION) ACT."

To the Editors of THE LANCET.

SIRS,—Your opinion on the following case will be highly esteemed. I am a young practitioner trying to work up a practice, and am conversant with public health work. A few days ago I notified a case of diphtheria occurring in a woman who had facilities for isolating herself and who preferred not to go to hospital. On calling next morning I found that the medical officer of health, who also practises, had visited my patient, and in addition to making his inquiries and examination of the premises went into all the circumstances of my patient's case, and then, saying he was a medical man (for my patient, not knowing him, was greatly surprised at his questions) asked to examine her throat, which he did. Having learned that he had done the same thing in another case I wrote charging him with breach of professional etiquette and rather ungentlemanly conduct towards me, as he had never even hinted at his intention; adding that I thought it probably due to a want of thought on his part, I could not allow anyone to interfere with my patients in that manner. He did not reply himself, but through the sanitary inspector begs to acknowledge the receipt of my letter and to say he has forwarded it to the council (local, I presume). If the council take up the matter should I decline to meet it on the ground that it is a private and professional matter outside its jurisdiction. And was I not justified in acting thus? I am, Sirs, yours truly,

July 2nd, 1895. PHAGOCYTE.

*** We are not inclined to regard the matter as of private professional concern only; and this because it is the conduct of a public official which is concerned, and because this official has referred the matter to the public authority whom he serves. The writer would do well to make himself fully conversant with the precedents and letters of the Local Government Board relating to this matter which are published in our articles of January and February last, entitled "Difficulties under the Infectious Disease (Notification) Act," notably the second article, issued on Jan. 26th. A communication should then be addressed to the district council in question, such communication to refer to the precedents which are most apt, and the council should be asked whether it is with authority that the action referred to was taken by their officer. Copy of the correspondence should be kept with a view, if need be, of appeal to the Local Government Board for their opinion and judgment.—ED. L.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENTS.)

City Recreation Grounds.

WHAT was begun some years ago as a doubtful experiment has become a great success. One by one the city churchyards are being converted into recreation grounds pleasing to the eye and a great boon to the poorer citizens living near them. A greater contrast than these spots before and since their conversion could hardly be imagined. There are good grounds for believing that this very desirable movement will continue until the old city churchyard, so graphically described by Dickens, becomes a thing of the past.

"Clerical Breakdown."

Sir Dyce Duckworth's paper and the annotation in the last issue of THE LANCET possess much local interest, the name of Duckworth being very familiar in Liverpool, while the subject of his lecture is brought very prominently before the local

profession and the public by paragraphs announcing the fact that the Rev. —— has been ordered by his medical advisers to take several months' holiday, and that he has gone to the Canaries, the Mediterranean, or on even more distant voyages. The return of the reverend gentlemen from these travels to their sphere of duty is also duly chronicled, the rest and change being generally of great benefit. It is quite within the recollection of middle-aged men that a clergyman would have thought himself very hard-worked indeed had he been left to take two full services by himself on Sunday. The Rev. Charles Honeyman sighed when invited by Colonel Newcome to breakfast at nine; what would he have thought of services at eight or even an earlier hour followed by morning, afternoon, and evening services every Sunday, with daily services and frequent sick calls? The architecture of many local churches is rather behind date, and the lofty pulpit in which the preacher is subjected (especially in the evening) to an over-heated and vitiated atmosphere must be very trying to the health.

Grave-plots in lieu of Vaults.

At the seventeenth annual meeting of the Church of England Burial, Funeral, and Mourning Reform Association, which was held on Wednesday, June 26th, in Stafford House, London, by permission of the Duke of Sutherland, the report for the year was read. In this report the thanks of the society are rendered to Mr. F. W. Lowndes of Liverpool for suggesting that grave-plots be substituted for vaults, burial in a grave-plot being the only mode which really meets the wishes of those who desire to rest together in death. A vault becomes full, to the disappointment of the survivors, and a new vault, probably in another place, must be provided; whereas a grave-plot of sufficient length and breadth, surrounded and separated from the adjoining earth by coping, might contain the remains of families for generations if the practice be adopted of "side-by-side" burial in perishable coffins at reasonable distances of time. Such plots might be made small gardens, a tree planted, and flowers grown from year to year to tell of a joyful resurrection.

July 3rd.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Dr. Niven's Report for the First Quarter of the Year.

LAST winter was so exceptionally severe that a few facts, taken from Dr. Niven's summary of the weather, may well be noted. The mean temperature for the thirteen weeks was 4·4° F. below the average for the first quarters of the last ten years. There was much less than even our usual poor allowance of sunshine, the Jordan's Photographic Recorder in Oldham-road registering ninety-nine hours, which period only equals 11 per cent. of its possible duration. The average amount for the quarter during the previous three years was 164 hours. At the Stonyhurst Observatory the amount for the quarter was 210 hours and its proportion 23 per cent. The only factors likely to cause this difference are the sparseness of the population and the absence of manufacturing smoke at Stonyhurst. No doubt the severe cold caused increased smoke from household fires, which would add to the dark cloud above, but one manufacturing chimney equals in smoke production that of very many private dwellings, as evidenced by the immensely greater density of the fumes sent forth. The mean height of the barometer was 29·841 in., being practically identical with the average in the corresponding periods of the previous five years. The amount of rain measured at the City Observatory was 6·848 in., being about half an inch above the decennial average for the quarter. January was marked by squally weather with much rain and snow, becoming colder as the weeks passed by. The mean temperature was 33 6°—i.e., 5 7° below the average of the corresponding period of the previous ten years—the coldest day being the 28th, when the mean temperature was 25 0°. During the month we had twenty-two hours of sunshine—at Stonyhurst there were sixty-three hours—but our twenty-two hours were above the average of January, which for the last three years has been nineteen. February was colder even than January, the mean temperature for the four weeks being 31·5°, which is 7·9° below the average for the month during the previous ten years. On the 6th—the coldest day—the mean for the twenty-four hours was 22·4°. The mean height of the barometer was 30·130 in., being higher by 0·148 in. than the average of several years. Very little rain fell, and we had forty-three hours of sunshine in the four weeks, while the average for the month during the last three years was thirty-seven hours. Frost occurred on twenty-six days. In March the weather became rapidly milder, but there was very little bright sunshine. Rain fell on eighteen days of the four weeks to the aggregate amount of 3·181 in., being nearly 1·5 in. above the average. The mean temperature for the month was 42·3° which is slightly higher than the average and nearly 11° above that of February.

Births.—During the thirteen weeks of the quarter 4791 births were registered in the city, equalling an annual rate of 36·5 per 1000 of the population.

Sickness treated at the public expense.—The cases treated at the public hospitals and dispensaries were 12,030, an increase of 1678 as compared with the number treated in the first quarter of 1894.

Infectious sickness.—665 fresh cases were notified, against 1025 in the preceding quarter, and 820, the average for the first quarters of the previous three years. Small-pox was absent during the whole of the quarter. Scarlet fever was rather more prevalent than is usual, the notified attacks equalling an annual rate of 3·17 per 1000, the average being 2 96. In the last quarter of 1894 the rate was 5 57. Diphtheria was less prevalent than usual, the reported attacks being equal to an annual rate of 0 87 per 1000. Enteric fever also was less prevalent than usual. It is curious that there was less scarlet fever and enteric fever in the old townships than in the other and more salubrious districts of Manchester. The mortality returns indicate a greater prevalence of measles and fewer cases of whooping-cough than we generally have in the quarter. Influenza again visited Manchester during this quarter, 2 fatal cases occurring in January, none in February, and 106 in March. Since then it has been declining, but it has not yet left us.

Deaths.—These, influenced no doubt by the low temperature, equalled a corrected annual rate of 26·8 per 1000 of the population at all ages estimated to the middle of the year, which is more than 9 per cent. above the mean rate for the quarter. In the old township the rate was equal to 37 6 per 1000, in North Manchester it did not exceed 20·4, and in South Manchester it equalled 24·0 per 1000. The Manchester rate exceeded that of the thirty-three great towns by 1·6 per 1000. In London the death-rate was 26 0, in Edinburgh 30 5, in Glasgow 34·8, and in Dublin 37 1. The rate of infantile mortality was 165 per 1000 during the quarter, against 168 in the first quarter of 1894, and ranged from 138 in North Manchester to 208 in the old, or Manchester, township, this high rate telling plainly of bad sanitation and a degraded social and moral condition.

Dr. Niven again expresses his regret that in Manchester, with more than 500,000 inhabitants, so few direct complaints are made to him on matters concerning the public health—only sixty during the three months. The people themselves are apparently indifferent, but they owe a deep debt of gratitude to the Chief Constable and the police for the 2024 separate informations given to the medical officers of health during the quarter.

Degree Day, Victoria University.

On the 29th ult. a large assemblage took place in the Free Trade Hall to witness the conferring of degrees. The Vice-Chancellor, Professor Ward, presided, and was supported by the Principals of University College, Liverpool, and Yorkshire College, Leeds. He said that the annual statement was a plain record of steady progress, and spoke of the University having now "definitely made good its title to a place of its own among the chief educational institutions of the kingdom," and of the impress which time had already left in the death, at the beginning of the session, of Dr. J. G. Greenwood, the first Vice-Chancellor and late Principal of the Owens College, and within the last few days of Professor W. C. Williamson. To the memory of both he paid a graceful and touching tribute. The candidates presented for degrees numbered 118. In June, 1894, there were 115 and in June, 1893, ninety-one. Among them were a Doctor of Science and five Doctors of Medicine. Professor Ward said he had no doubt that the number of graduates in the faculty of medicine during the present session would make possible an equally favourable comparison, although for this the results of the July examinations would have to be awaited. He also mentioned the fact that the Victoria University has been included among the universities at which selected candidates for the Indian Civil Service are allowed to pass their probation.

July 2nd.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Mr. Gladstone's Farewell to Midlothian.

AT a meeting of the Midlothian Liberal Association held in Edinburgh on Wednesday afternoon last Mr. Gladstone's formal letter of farewell to his constituents was read. Such a communication can hardly be treated as a matter of politics purely, much less as a matter of party politics, by the most prejudiced of partisans. And to our profession it has a special interest, being the closing scene in a career of unexampled endurance. For sixty years Mr. Gladstone has been in the van of his party, ever contesting, pleading, conciliating, proselytising, and leading, and it is impossible to estimate the strain upon even his physical system that this perpetual intellectual restlessness, coupled generally with no light demands upon his bodily strength, must have been. Yet at the advanced age of eighty-five he remains the possessor of a physique that many a young-old man of forty might envy him. Politics purely apart, Mr. Gladstone must always be an object of respectful interest to the medical man as a remarkable example of a perfect combination of the highest intellectual and physical qualities.

Edinburgh Royal Infirmary.

The much-talked-of enlargement of the buildings of this institution has at last got one step forward, as the managers at their last meeting have adopted the report of a commission appointed to consider certain questions of rebuilding.

The Harveian Festival.

The Harveian Festival took place at the buildings of the Royal College of Physicians of Edinburgh on Friday last, June 28th, when Dr. David Yellowlees delivered the annual oration.

Sir Henry Duncan Littlejohn.

The announcement that Her Majesty has been pleased to grant to Dr. Henry Duncan Littlejohn, the medical officer of health of Edinburgh, the honour of a knighthood has been received with general satisfaction, not only by the friends of the recipient of the honour, but by the inhabitants of the city over whose public health he watches untiringly.

The New Secretary for Scotland.

The appointment of Lord Balfour of Burleigh to be the new Secretary for Scotland will be learned with more interest than usual by medical men, as his lordship is the sponsor of the Midwives Registration Bill. Lord Balfour is a Scotch representative peer, and therefore in possession for a term of a seat in the House of Lords, and has been Parliamentary Secretary to the Board of Trade.

July 3rd.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Workhouse Hospital Reform.

UPON June 25th a deputation organised by the Irish Medical Association waited upon the Irish Local Government Board to consider the subject of workhouse hospital reform. The deputation, which was received by Mr. George Morris, the Vice-President of the Board, and Mr. H. Robinson, consisted of the following members: Dr. Henry Oulton, chairman of council; Dr. Arthur Benson, secretary of council; Dr. Jacob, secretary of association, as representing the Irish Medical Association; Dr. Walter Smith, president; Mr. Andrew Horne, vice-president, as representing the Royal College of Physicians of Ireland; Dr. Thornley Stoker, president; Dr. William Thomson, vice-president, as representing the Royal College of Surgeons in Ireland; Dr. James Little, president, as representing the Royal Academy of Medicine in Ireland; and Drs. Moorhead (Cootehill), Wilson (Castleblayney), and Leeper (Rathdrum), representing the workhouse medical officers. There were no reporters but it was expected that the result of the conference would soon be made public.

Trinity College, Dublin.

Dr. Charles Ball has recently been appointed University Anatomist and Dr. E. H. Taylor University Examiner in Anatomy.

Ulster Medical Society.

At the annual meeting of the above society held on June 27th the following were elected office-bearers for the session 1895-96:—President: Professor Sinclair. Vice-Presidents: Dr. Bingham and Mr. Mackenzie. Honorary Treasurer: Dr. Kevin. Pathological Secretaries: Dr. Lorrain Smith and Dr. Lynass. Librarian: Dr. Shaw. Secretary: Dr. McKisack. Council: Dr. Lindsay, Dr. McCaw, Dr. Dempsey, Dr. Calwell, Dr. Bigger, and Dr. McDonnell. It was decided that during next session the meeting shall be held at 8.30 P.M. instead of at 4 o'clock.

The Ballymacarrett "Mystery."

On Friday, June 28th, an inquest was held in Soldierstown, near Moira, county Down, in reference to the death of a woman named Robinson, regarding whose decease some ridiculous rumours had been put in circulation through certain parts of Belfast. As the coroner (Dr. Mussen) stated in opening the inquiry, the deceased died on May 11th, and she was certified as dying from a certain disease; but rumours occurred among the relatives that the real cause of death was not what was certified by the medical men who attended her, and these coming to the ears of the authorities, they deemed it right that the matter should be cleared up and for ever set at rest in connexion with the death of the deceased. The coroner regretted that these suspicions had not been mooted earlier to the authorities, as it was now seven weeks from the woman's death; but he thought it was better they should be cleared now, both for the satisfaction of the relatives as well as of the medical men in charge of the case. From the evidence it would appear that Margaret Robinson, a young married woman twenty-seven years of age, living in Ballymacarrett, Belfast, gave birth to a male child on May 4th, the infant being born when Mr. Cathcart arrived. She went on quite satisfactorily until about eight o'clock in the evening of the second day, when in consequence of a message he paid her a visit (he had already seen her in the forenoon of that day) and found her in pain and vomiting, and on examination he detected a swelling on the right side. Looking upon her case as serious, Mr. Cathcart thought it advisable to have another opinion, and a neighbouring medical man, Dr. Smylie, was called in. After examining her they satisfied themselves that the uterus was empty, but that she had a tumour, and that as far as her confinement was concerned she was suffering from no ill effects from it. They then asked that another medical man should see her, and Dr. Campbell was brought in consultation. He agreed with them that there was a tumour, and told the husband that an operation would be necessary on an early day if there was any prospect of saving her life, and urged her removal to the Samaritan Hospital. Her husband declined to take this course, and Dr. Campbell retired from the case. The woman getting no better, Dr. Darling of Lurgan, who knew her and her friends, as they had come from his neighbourhood, was next brought to see Mrs. Robinson on Tuesday, May 7th, with Mr. Cathcart. He agreed with the diagnosis already made, and recommended the woman's removal to a hospital. The relatives said they thought a child was left in the uterus, but he assured them that there was nothing of the kind. Finding that his wife was getting no better, the husband at last had her removed to the Samaritan Hospital on Tuesday, May 7th, but on condition that no operation was done without his consent, and on Saturday, May 11th, she died in that institution, the husband not having given his consent to an operation being performed. Dr. Campbell was most anxious for a necropsy and recommended the husband to allow this to be made, and pointed out to him how dissatisfied he (Dr. Campbell) was that he had not been allowed to treat the patient in the way all the medical men had agreed was right. The husband asked Mr. Cathcart for a line to enable the body to be taken to Soldierstown, and after the medical man found that he (the husband) was averse to a necropsy being made he did so, but he also wanted a post-mortem examination. The woman's husband taunted Dr. Cathcart in reference to the certificate, remarking that if he knew what was the cause of death there was no reason why he should not give a certificate. When the husband asked Dr. Campbell for a certificate on the evening of the day his wife died, he declined, as he naturally wished the matter cleared up by a necropsy. This, however, as I have said, was refused, and when the husband returned to Dr. Campbell on the day he had buried the body he (Dr. Campbell) gave

him the usual certificate to the effect that the primary cause of death was an abdominal tumour, and the secondary peritonitis. After the woman had been buried the people in the district began to talk; all sorts of rumours prevailed, and one of the most ridiculous was that there was a second child undelivered. Finally, the authorities in Dublin decided to hold an inquiry, and they instructed Dr. Macan to make a post-mortem examination. Accordingly Dr. Macan (the body having been exhumed) examined the remains on June 25th, and found the uterus empty, but there was an ovarian tumour of the right side with a twisted pedicle. There was not much peritonitis, Dr. Macan said, but possibly hæmorrhage; but the tumour was ruptured, and, in his opinion, the rupture of it caused death. The uterus was healthy; there were no remains of a child, and he thought an operation would have been the proper treatment, not in a little back room or kitchen, but in a hospital. A juror having asked what led to the inquiry being held, the coroner, producing a bundle of papers, replied that if he had read what they contained he would understand the matter. There was enough in them to hang a man. The medical men, however, he said, would leave that court without a stain on their professional reputation. One of the solicitors in the case, who appeared on behalf of Mr. Cathcart and Dr. Smylie, asked the coroner for copies of the depositions already sworn in the case, but the police authorities objected, saying the more regular way would be to apply for them elsewhere, and the coroner declined to give them. At the conclusion of the evidence the jury found "that Margaret Robinson died on Saturday, May 11th, 1895, at the Samaritan Hospital, Lisburn-road, Belfast, from natural causes—viz., the bursting of an ovarian tumour. The jury are of opinion that every care and attention was given to the deceased by the medical men who attended her." Thus has ended an inquiry in the complete vindication of the professional character of all the medical men concerned in the case. The only pity is that the jury did not add a rider to the effect that those were blameworthy who refused their consent to an operation.

The Queen's College Professors.

Mr. Rentoul, M.P., having forwarded to Mr. John Morley, M.P., a memorial signed by all the Ulster Unionist members and by a dozen Nationalist members, referring to the cases of Professor Meissner of Belfast and several other professors of Queen's College whose salaries had greatly decreased owing to the abolition of the Queen's University, Mr. Morley replied that the question had already been dealt with by their Lordships of the Treasury under a former Government, and on several occasions, and that after very careful consideration they did not feel able to grant compensation in such cases. Mr. Morley also stated that the question was tested by Professor Pye, M.D. Irel., of Queen's College, Galway, by means of a petition of right, and that the case was decided against him with costs.

Belfast Dispensary Committee.

At a meeting of this committee held on July 1st, Mr. Dundee resigned his position as medical officer of the Carnmoney district. His successor is to be appointed at the next monthly meeting.

The Listowel Guardians and the Irish Medical Association.

At the last meeting of the Listowel guardians the chairman, Mr. M. J. Nolan, J.P., delivered a very able and exhaustive speech, in which he contended that the strictures of the Irish Medical Association with regard to the management of union hospitals could not apply to the Listowel union. He compared the dietary of twenty years ago with that of to-day, and showed that whilst in 1875 seventy-three hospital patients got only thirty-three pounds of meat and twenty-four quarts of milk as extra diet, last week in their hospital 110 patients got 245 pounds of meat, 438 quarts of new milk, and 2408 eggs, besides bread, skim-milk, and tea. With regard to bedding, they had wire-woven spring bedsteads with fibre mattresses. "Nothing could exceed the cleanliness of their well-ventilated hospitals and the anxious care with which the wants of the sick poor therein were attended to by the medical officer, the sisters, and the attendant nurses in charge." A most remarkable reduction had also taken place in the death-rate amongst all the inmates of the workhouse: twenty years ago it was very nearly double what it is at present. The statement of a witness before the Financial Relations Committee that some of the Irish unions are mismanaged financially was also animadverted on by the chairman. He admitted that the rates in Listowel union had gone up enormously during the past twenty years. They are now 2*s.* 10*d.* in the pound as against 1*s.* 2*d.* twenty years ago—in other words, for every £1000 of poor's rates then levied they now required more than £2400. But many things tended to produce that result. For instance, expenses connected with Registration, Jurors, and Voters Acts, &c. were now levied off the poor's rates, and in addition to that the actual amount of poverty to be relieved has greatly increased during the past twenty years. This latter state of affairs he mainly attributed to emigration, which, he asserted, results in the vigorous and strong leaving the country, whilst the weakly, the very young, and the very old remain behind a burden on the rates. The guardians were so pleased with the chairman's statement that they decided to have it printed and circulated.

The Limerick District Lunatic Asylum.

A committee of the board of governors of the Limerick Lunatic Asylum last Thursday met the two medical inspectors and the engineer of the Board of Control for the purpose of conferring with them as to the best means of enlarging the accommodation of the asylum. As the result of the conference, the committee decided on recommending that a detached building shall be erected as a hospital for acute cases, and capable of receiving 150 patients. It is also proposed to erect a new residence for the medical superintendent, and the committee further suggest that thirty additional acres of land should be purchased for farming purposes.

Cork District Lunatic Asylum.

Upon the resignation of Mr. G. B. Wilson of his post as assistant medical superintendent on the ground of ill-health, the governors of the institution unanimously resolved to recommend the Board of Control to grant him the largest pension in their power.

July 2nd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

International Statistics.

THE question of the depopulation of this otherwise highly favoured country is continually coming to the fore, and the seriousness of the situation was placed *en évidence* the other day at the Conférence Broca of the Société d'Anthropologie by M. Chervin, who gave the following figures:—

Number of married of both sexes per 1000 inhabitants aged above fifteen years.

Hungary	91·6	Holland	49·0
German Empire	53·0	France	45·8
England	52·6	Belgium	41·9
Denmark	52·0	Greece	41·6
Austria	51·3	Scotland	40·9
Italy	50·1	Switzerland	40·8
Finland	49·2	Ireland	23·0

The other table given by him is still more suggestive:—

	Legitimate living children born per 1000 women aged between 15 and 50 years.	Illegitimate living children born per 1000 women aged between 15 and 50 years.
German Empire	270	26·5
Scotland	269	19·9
Belgium	265	19·8
Italy	251	24·6
England	250	12·1
Austria	250	44·4
Sweden	240	(?)
Ireland	240	4·1
Switzerland	236	10·2
France	163	16·7

The position of France at the very bottom of the list must provide food for painful reflection to the thinking Frenchman, for it means that sooner or later this country will become politically and socially a *quantité négligeable*. How can we account for this inferiority on the part of France? M. Rochard[1] incriminates alcoholism. He says that the consumption of alcohol has in this country doubled within the last twenty years. In 1885 the annual consumption was 1,440,342 hectolitres, whereas the latest statistics give 2,476 387, or no less than 6 litres 45 centilitres per person per annum. In like manner insanity has within the last few years increased one quarter, and the Conseil Général has just voted 4,000,000

[1] Académie de Médecine, June 25th.

francs for the construction of a Ville-Evrard of special pavilions to accommodate 700 male and 200 female alcoholic patients. Every visitor to this city must be struck with the prodigious number of wine shops existing. In 1890 there were no fewer than 29 583 or one for every three houses and eighty-two inhabitants. It is, however, very strange that in the discussions that so frequently occur on this subject of depopulation no mention should be made of the chief cause—viz., the Frenchman's innate thrift. There is nothing he dreads so much as poverty for his children, and he consequently is careful not to have too large a progeny. The urban Frenchman, moreover, marries late in life, and the recognition of that baneful institution—concubinage—must be held in great part responsible for this. The crushing expense of a residence in Paris must also act as a deterrent to marriage. The average Frenchman never dreams of emigrating, his reply to any such question being, "Pourquoi m'en aller aux colonies; on est si bien en France."

Hospital Ship for Newfoundland.

It will be a matter of surprise to your readers to learn that floating hospitals are things of the future in a country possessing such an extensive seaboard as France. It is announced that the first of the hospital ships of which the fleet of the *Œuvre de Mer* will be comprised will shortly be put on the stocks at St. Malo. It will be a vessel of 300 tons and will leave France for the fisheries of Newfoundland in March, 1896. The Breton fishermen who pursue their calling in these latitudes will doubtless greatly appreciate this attention on the part of their stay-at-home compatriots.

Hospital Charges.

When a patient is admitted into a Paris hospital a certain daily charge is made unless he be in such poor circumstances that payment is out of the question. A recent prefectorial edict fixes these charges as follows:—Daily charge for adults: medical wards, 3 francs 30 centimes; surgical and lying-in wards, 5 francs. Children: medical wards, 2 francs 80 centimes; surgical wards, 3 francs 50 centimes.

July 2nd.

ROME.

(FROM OUR OWN CORRESPONDENT.)

The New "Regolamento d'Igiene."

PROFESSOR PANIZZA, who, as I stated in a previous letter, has been compiling for the Roman Giunta a "Regolamento Locale d'Igiene," has just submitted it to the authority in question. It is divided into five heads. The first deals with "assistenza medica" and "vigilanza sanitaria," and makes ample provision for the effective carrying out of both. It concerns, in fact, the *personnel* of local sanitation, while the second head has reference to the hygiene of the soil and the dwelling-house, particularly to everything affecting the purity of the water-supply as distributed through pipes, by wells, or by fountains. Under the third head cognisance is taken of the foods and drinks. These are to be safeguarded by a series of stringent conditions, controlled by inspectors, as to soundness and freedom from adulteration. The fourth comprises the measures adopted against the diffusion of infective maladies in man and animals and formulates the rules to be observed in "denunzie" (complaints) and disinfecting procedure. The fifth and last head deals with the "polizia mortuaria" (disposal of the dead). The new "regolamento" is a great improvement on its predecessors in simplicity and working. That which was previously in force contained as many as 591 sections, which even then were not exhausted, and from their confusion and complexity were more frequently honoured in the breach than in the observance. The "regolamento" now submitted by Professor Panizza under its five headings and in its whole *ensemble* contains less than a third of its predecessor's sections, with corresponding distinctness in defining the powers and responsibilities residing both in the officials and in the public. Henceforth evasion of the law will be difficult, if not impossible, on the part of the latter, and dereliction of duty on the part of the former will be easy of detection and promptly made subject to discipline. The sanitary procedure of the next few months will put the "regolamento" to the required test; and we shall then have practical proof of the superior conditions under which the health and comfort of the lieges in Rome and its provinces are protected and ensured.

Barbers and Contagious Disease.

A curious case has recently been before the Turin law courts. According to the official report a gentleman, on getting shaved at the barber's whose shop he "frequented" for that purpose, received a slight and involuntary incised wound, the result of which, after a few days, was the appearance of a cutaneous eruption which, when subjected to the examination of the consultants at the local policlinico, was declared to be syphilitic. The razor, it was held, had by a previous performance on the beard of a customer been infected with the malady and caused the characteristic eruption in the next comer, who was the complainant. The court, in punishment of the barber's negligence in cleaning his instruments, fined him 250 lire (£10). The occurrence has excited much comment here as well as in other cities of the kingdom. The public, particularly the travelling public, are apt to turn in at any barber's for shaving purposes, and these functionaries, it is remarked, are far from rigid in their observance of the good English custom of plunging the razor after each performance into boiling water. The matter has been under the consideration of the sanitary office, and henceforth, it is expected, every barber will be compelled to pass his razors through a solution of sublimate (1 in 1000) so as to destroy the infective microbes. Nor is it the razors only that should be thus vigilantly looked to. The combs and brushes of the Continental Figaro are, often after very promiscuous use, seldom as clean as ordinary prudence prescribes—another source of danger to the unsuspecting traveller, particularly in Southern Europe.

July 1st.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Effect of Compressed Air on the Health of Workmen.

DURING the last few months a regulating lock weir has been in course of construction on the Danube Canal, the bottom of the water being made accessible to the workmen by means of submerged iron caissons, into which air is forced so as to displace the contained water. The men in the caissons work under a pressure of four and a half atmospheres, and in consequence suffer from peculiar symptoms, which have been investigated in the clinic of Professor Schrötter. Last Saturday a man died after some hours' work in a caisson, and the post-mortem examination, performed by Professor Hofmann, showed fluid in the larynx and air passages and extravasations into the brain, pharynx, and lungs. Death was due to suffocation from œdema of the lungs and gradual poisoning by carbonic acid. Respiration is retarded by the compressed air, for the red blood-corpuscles absorb an excessive amount of oxygen, and expiration is rendered more difficult. The contents of the superficial bloodvessels and lymphatics are driven inwards, the internal organs are overfilled with blood, the action of the heart and the circulation of the blood are retarded, and general distress, palpitation of the heart, headache, giddiness, and bleeding from the nose, mouth, ears, and lungs ensue. The compression of the muscles and nerves also produces arthralgia. The dangerous symptoms usually show themselves when the man on ceasing work passes from the compressed air in the caisson to the normal atmospheric pressure, the red blood-corpuscles then giving off the excess of absorbed oxygen, which forms gaseous vesicles in the blood, causing obstruction of the vessels, and thereby producing paralysis of the legs, arms, rectum, and urinary bladder. Professor Schrötter recommends as precautionary measures that elderly men or those who are in weak health should not be employed in this work, that the condensation of the air should be gradual, and that the time for working should be short (three or four hours a day). The Council of Hygiene has requested the eminent hygienist, Professor Max Gruber, to prepare a report on the subject, and it will be the duty of the Government to take such means as may appear to be necessary in the interest of the workmen.

True Gonorrhœal Cystitis

A paper on the above subject was read by Dr. Wertheim at a recent meeting of the Vienna Medical Society. Hitherto the existence of a true gonorrhœal cystitis has not been satisfactorily demonstrated, for disorders of the urinary

bladder occurring in consequence of gonorrhœa have been explained by an inflammation localising itself on the internal orifice of the urethra (urethro-cystitis). Some two years ago Dr. Wertheim had under his care a girl aged nine years, who was affected with vulvo-vaginitis in consequence of rape, and whose urine contained leucocytes charged with gonococci. An anæsthetic having been administered, a part of the mucous membrane of the urinary bladder as large as a millet seed was removed, which on microscopical examination showed gonococci in both epithelium and connective tissue. In the submucous connective tissue the capillaries and blood-vessels were found to be filled with gonococci partly involved, partly characteristically tinged. The occurrence of red blood-corpuscles proved that those vessels are to be regarded as capillary vessels and precapillary veins. Gonococci may enter the blood either indirectly through the lymphatic system or by direct penetration into the blood stream at the place of the primary patch. This explains the origin of gonorrhœal endocarditis and other gonorrhœal sequelæ.

Increase of Venereal Disease in Budapest.

According to statistical returns made by Dr. Marschalko, the number of venereal cases in Budapest has doubled since 1887. He supposes the insufficient regulation of prostitution to be the reason of this increase. Well-known prostitutes have hitherto been examined in their own lodgings by the police physicians twice a week; but at the end of 1893 there were 1131 prostitutes and only 14 police physicians; each physician, therefore, had to examine more than 100 prostitutes daily. Dr. Marschalko advocates the microscopical examination of the secretion of the genitals and ascribes the spread of the disease to the circumstance that women affected with syphilis are not allowed to remain in the hospital until their entire recovery. There are also a great many loose women not officially registered. In the clinic of Dr. Róna, among 140 patients there were 58 prostitutes.

The Antitoxin Treatment.

By order of the Hungarian Minister for the Home Department, Dr. Torday has performed 62 curative and 560 prophylactic injections in the district of Békés. In the former group seven children died. Among the children for whom injection was performed as a precautionary measure not one has fallen ill, although sixty-six of them were brought in contact with cases in an infectious stage.

July 1st.

EGYPT.

(FROM OUR OWN CORRESPONDENT.)

The Tourist Season.

THE winter months from November to April are tempered, socially and financially, by the inpouring of European visitors in search of health, amusement, and sunshine. Ten years ago the numbers were hardly worth counting, and consisted chiefly of friends of the English army of occupation. Five years later the tourists reached an aggregate of 4000, and were nearly all English, though Americans had even then begun to include Egypt in their feverish treadmill round the world. During the winters of 1892 to 1894 the numbers were again raised to 5400, and it almost seemed as if a zenith had been reached, for in Cairo, where all the visitors take a more or less temporary rest, two hotels were obliged to close their doors for want of guests and money. But in the season just concluded there were no less than 7492 arrivals into the country either by way of Alexandria or by the Suez Canal, and of this unheard of number only 45 per cent. were English, 45 per cent. were American, and the remaining 10 per cent. were made up by German and other nationalities. The Americans themselves pretend that this great impetus from their country is a good deal due to the Cairo exhibit at the Chicago Fair. For next winter we are promised another bumper season, and some of the hotels are already building extra accommodation. Last winter lent itself kindly to the future development of Egypt, for it was exceptionally rainless, and though the temperature on the night of Jan. 6th fell to the unprecedented minimum of 32° F., and again on Jan. 19th to 35°, occasioning the death by frost of many astonished vegetables and flowers, the winter months passed away very pleasantly and have been followed by a very cool spring.

Anti-diphtheritic Serum.

The report of the Alexandria Committee formed in October last states that between November and May forty-four cases of diphtheria have been treated by serum obtained from Dr. Roux. Thirty-three patients recovered and eleven died, and tracheotomy was performed four times, with one death. To provide for the future wants of Alexandria and possibly some outlying towns of Egypt, two horses have been immunised and will supply serum in abundance. Great credit is due to our Greek colleagues, who are chiefly responsible for this item of progress. The Greek hospital lent a bacteriological laboratory, and a site for a special stable. One of the horses was bought by the committee, and the other was presented by the two Princes Toussoun. This is almost the first time that any of the Royal household have taken any intelligent or philanthropic part in the direction of science or medicine. In Cairo the serum from France or Germany is to be found for sale at all the chief druggists' shops, and is also sold by the Sanitary Department.

The Medical School, Cairo.

It is now five years since the first European was appointed to this school as Professor of Anatomy. During the past year fresh attempts have been made to emerge from darkness into light. A German has been appointed as Professor of Pharmacy and Materia Medica. Dr. Kaufmann is now to be Professor of Bacteriology, and is having a laboratory furnished for him, and a European librarian and secretary has taken the place of an Egyptian. Many important changes must still gradually be made, though in addition to French jealousy every proposal for reform is met by obstinate obstruction on the part of some of the higher native officials. Their fear of being ousted entirely by Europeans would seem to be premature, for the following branches are still exclusively taught more or less badly by native medical men—physics, natural history, physiology, histology, operative surgery and surgical anatomy, hygiene, jurisprudence, obstetrics, diseases of women and children, and the systematic lectures on medicine, surgery, and diseases of the eye and of the skin. The whole number of scholars is now 62, of whom 34 are male and 12 are female medical students, 14 are students of pharmacy, and 2 are the nucleus of a veterinary school.

The German Deaconesses' Hospital.

This is the best of the private hospitals in Cairo and admitted 457 patients during the year 1894. The admissions of the first and second classes have risen from 106 in 1893 to 163 in 1894, showing that the committee were quite justified in building new wards. Of the total admissions 100 were Egyptians, 72 were English and Maltese, and 69 were Greeks, the Germans themselves only contributing 46. The out-patient department was visited by 1033 patients for medical or surgical advice and by 23,058 for eye disease, and 698 operations were performed upon the eye patients. The infectious patients during the year were only 4—small-pox 2, diphtheria 1, and scarlet fever 1, and their nationalities were English, Swiss, and American. Of enteric fever there were as many as 31 patients, of whom 7 died.

Cairo, June 17th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Important Decision of the Supreme Court of the United State.

A WOMAN sued the Union Pacific Railroad Company for an injury to the spine, which she claimed had resulted from the fall of an upper berth of a sleeping car upon her. Three days before the trial the company asked the court for an order requiring the woman to submit to an examination by the company's physician, pledging to make it with as little exposure of the person as possible and in the presence of the medical man in attendance upon the woman. The court overruled the motion on the sole ground that it had not the right to enforce such an order. It was carried to the Supreme Court, which sustained the action of the lower one, saying that "such an examination is the invasion of the sanctity of the person to a degree that the law does not recognise, and that it is inconsistent with common law," and, further, the opinion said that "the court could not find that, until within a generation, it ever was thought that a court of common law had such a power as was claimed in this case." Justices Brewer and Brown dissented, and it is to be noted that they are the younger men on the supreme bench, who may be said to belong to, to understand, and sympathise with the generation now on the stage. Justice Brewer called attention to the "new times" in which we are living. He said that the actions for damages for personal injuries, now

so common, were very infrequent years ago, and that it was an open question and not determinable under the old common law procedure. If a person permitted exposure for the purposes of examination by the physicians who were to be called to testify in his or her behalf, it seemed to him but common justice that an order should be made for examination by the opposite side. He did not think it right that any person, where his or her interests were promoted after making disclosures of the person, should be allowed to refuse this permission to a physician representing the company sued on the plea of "sanctity of the person."

Suit against an Optician.

A public school teacher of New York sued a certain firm for $5000 because she had taken them a prescription for glasses, which they had filled, and the wearing of which was followed by severe vertigo—so severe, she claimed, as to lead to the loss of her situation as teacher. The mistake which the opticians made was to put the lens for the right eye in the frame for the left, and *vice versâ*. Expert testimony was called in and it was easily shown that an error had been made, but by no means $5000 worth of error, and the jury were undoubtedly influenced by the ulterior effect it had had in depriving the lady of her occupation. They awarded her $750, but the opticians appealed to the General Term, for they are resolved to establish a precedent; for if this precedent is to stand every optician will have to exact an agreement from his customer to be exempted from responsibility for his subsequent health. The glass accused of such deeply seated mischief was only two degrees stronger than the ordinary window glass, and was of the kind that women who want to be in the whole fashion cause to be put in a lorgnette when there is nothing the matter with their eyes. The plaintiff wore the glasses six months before she went to the opticians on account of her illness. Their lawyer said: "The opticians were no more responsible for what happened to her than a shoemaker would be if a man bought a pair of shoes and allowed the ones that belonged on the left foot to be put on the right foot, and after he had worn them in that way for six months, relying on the maker's reputation, should sue the shoemaker for damages because his feet were injured."

Dispensing with kissing the Bible.

Anyone who has acted as a witness in court and kissed the court Bible in taking the oath should understand the sanitary reasonableness of Pennsylvania's new law to dispense with the kissing. Nathaniel Hawthorne described the Bible he used in administering the oath to American waifs and strays who came to his Consulate in Great Britain as "greasy with perjuries."

Honouring the Discoverer of Ether.

There are fifty-three names of men, inscribed as a roll of honour, in the dome of the new House of Representatives in the State House at Boston. Each one is intended to mark an epoch or to commemorate a man who has beneficently influenced the course of events. Among them is that of Dr. William T. G. Morton, who was the man who instituted the series of experiments that established the use of sulphuric ether in the practice of medicine and surgery. His name deserves the honour given to it. The present contest for honours among the men who have made the antitoxin usable and useful sharply recalls the struggle, now nearly fifty years ago, for the honour of first using anæsthesia, and there were several first men, as is often the case. There was a claimant in Hartford who had used it in the painless extraction of a tooth, Morton in Boston, who really gave the ether for an operation by Dr. Bigelow, and Dr. Jackson, to whom many think the honour is due.

June 30th.

NEW ZEALAND.

(FROM OUR OWN CORRESPONDENT.)

The Laying of the Foundation Stone of the Wanganui Hospital.

NOT, indeed, before it was needed was the foundation stone of the new Wanganui Hospital laid on March 14th last. This has been brought about through the generosity of the late Mr. Richard Reid, who lived for a long series of years in the Wanganui district, and who left the sum of £5000 to the Wanganui Hospital Board. It is curious to reflect that the late Mr. Reid occupied as his first billet in the colony the position of custodian to the hospital to which he ultimately bequeathed such a very substantial and munificent gift. This sum has been augmented by the New Zealand Government to the extent of £1500. Unfortunately, the gross total is not sufficient to meet the initial expenses of the first contract, but the Wanganui Hospital Board has very wisely—regarding the general condition of the existing hospital—considered itself warranted in undertaking a work which was so greatly needed, relying for the remainder of the necessary funds to complete the structure upon the generosity of the people and a further grant from the Government. The foundation stone was laid by the Hon. Richard Seddon, the Premier of New Zealand. The occasion was taken advantage of by the various friendly societies and the local Volunteers, who, mustering in full force, gave the proceedings an *éclat* which would have been otherwise wanting. The building, which will contain about twenty-five beds and all recent hospital improvements, will probably be completed about the end of the present year. It will be the first building of any magnitude built of brick on the west coast of the north island of New Zealand.

Antitoxin.

This remedy has at last reached the shores of the colony, and in the few cases in which it has been exhibited very satisfactory results seem to have been attained. The successful issue of the few cases treated here at the antipodes with the remedy will be hailed with satisfaction by the antitoxin enthusiasts in the mother country. It does not, however, seem very clear to medical practitioners in the colony as to the length of time after "manufacture" that the antitoxin serum holds its special virtue. Some of the tubes forwarded to the colony become "cloudy" in transit. "Does this cloudiness deprive it of its specific action?" is the question which has been asked. It has been well established that it is a very wise precaution on the part of medical men to look upon—and diagnose as such, for the matter of that—all cases of suspicious sore-throats of a membranous character as diphtheritic at the onset for the purpose of preventing the spread of the more serious malady; but all cases thus supposed to be diphtheritic are not truly so. Unless the cases be associated with nephritic changes, and perhaps followed by the development of peripheral neuritis, or the diagnosis has been made by bacteriological cultures, the certainty of the disease cannot be established notwithstanding the statement that diphtheria is said to be easily diagnosed. Busy medical practitioners have not the time (and very often not the means) to obtain bacteriological cultures, and to await developments would be suicidal when we have the antitoxin remedy at hand and we are still uncertain. It may, therefore, act as a charm in cases of follicular tonsillitis which are just on the mend, and we praise its special influence when we ought really to pat nature on the back. How diphtheria seems to take possession of some of the very healthiest country surroundings in this colony almost without a trace of its ingress is very difficult to conceive, but numerous instances of its appearance in this manner might be recorded. The honorary secretary of the Wellington Branch of the New Zealand Medical Association has forwarded a special letter of thanks to the New Zealand Government for its forethought in obtaining a supply of antitoxin. The honorary secretary, Dr. F. W. Mackenzie, states through his branch "that the remedy arrived just in time to meet a severe epidemic of diphtheria at the Upper Hutt and Petone, and has already been the means of saving several cases which would almost certainly have proved fatal without it."

Deaths under Chloroform.

Four cases of death under the influence of chloroform have occurred in this colony during the past few months, two of them having taken place in the dentist's chair. Operations about the mouth and pharynx have their own special dangers and difficulties, not only on account of the operative measures themselves, but also on account of the great care with which the anæsthetic requires to be given. It will, I feel sure, be soon established that it is safer policy to look upon all dental operations of any magnitude in the light of a serious matter and give the anæsthetic with all the surroundings of a surgical proceeding—viz., by carefully preparing the patient beforehand and doing the extraction the first thing in the morning in bed, at the patient's own house, if found possible. By following out this course in all instances much danger is eliminated.

Obituary.

THE RIGHT HON. THOMAS HENRY HUXLEY, P.C., F.R.C.S., M.D., F.R.S., LL.D., D.C.L., &c.

THE profession will have learned with deep regret of the death, on June 29th, of Thomas Henry Huxley, from complications following influenza, at Hodeslea, Eastbourne, and will desire to express their sincere sympathy with his widow and family at their loss. With him a striking individuality has passed away and left the world distinctly the poorer. Besides contributing largely to the actual sum of knowledge that has accumulated during the past half century his clear and robust understanding exerted in this country, at a time when it was much needed, a very powerful, a very beneficial, and a very persistent influence on the pursuit and advance of science. Gifted with a quick and tenacious memory, possessing singular self-reliance, with the power of seeing at a glance into the very heart of things, abhorring shams, whilst thoroughly appreciative of sound knowledge derived from hard work and close observation, veracious and reliable in all that he said and did, though his sayings and doings often ran counter to established practice, he was one of the first to insist on the necessity for a material alteration in the method of education adopted in this country. And the modification he advocated with all the energy he possessed was the introduction of science into our schools and universities as a substitute for, or at least as holding equal rank with, purely linguistic or mathematical attainments so long held to be their chief or even exclusive function. That such scientific instruction should bear good fruit he maintained it should be taught objectively, through the senses of the learner and not by books, and he spared no pains to impress upon the public mind that it was the paramount duty of the Government, of wealthy individuals and rich companies, to found and endow research laboratories. The future predominance of the commercial power of England was, he maintained, essentially dependent upon whether her merchants had the wisdom to appreciate the gifts given to them by science, whilst the industries could only be properly developed by scientific methods and by a thoroughly scientific organisation. Earnest and painstaking to the last degree, he was himself a conspicuous example of the healthy and open mind that might result from this method of education; for, commencing life with fewer opportunities and poorer prospects than many of his associates, he raised himself by his indomitable energy and unwearied application to the foremost position amongst English men of science. The leading events of his life are given in the lively but unpretending autobiography prefixed to the recently published edition of his works. He was born on May 4th, 1825, at Ealing, his father being one of the masters in the large semi-public school of that place, then a village. He thought himself to be both in his physical and mental endowments the son of his mother, inheriting, however, an inborn faculty of drawing from his father. He notes it as a curious chance that his parents should have fixed for his usual denomination upon the name of that particular Apostle with whom he had always felt most sympathy. His school days were short, and he deliberately affirms that the society into which he fell during that period was the worst he had ever known. His great desire was to become a mechanical engineer, but the fates were opposed, and he commenced the study of medicine under a medical brother-in-law, becoming a student of Charing-cross Hospital in 1842. That part of the professional course which most interested him was physiology, because it deals with the mechanical engineering of living machines, and he felt through life a warm regard for Wharton Jones, who was then lecturer on physiology at the hospital, and from whom he received much kindly help, for his exact and extensive knowledge. When about fourteen years of age he attended a post-mortem examination, and in some unexplained manner, without cutting himself, was poisoned, became apathetic, and suffered from occasional paroxysms of internal pain, which he believed laid the foundation of his "constant friend, hypochondriacal dyspepsia." As a student he read discursively and unmethodically, but was able in 1845 to pass the First M.B. of the London University, when he was placed second in honours, Dr. Ransom of Nottingham securing the first place. While still at the hospital he published his first paper, in which he described the layer of cells of the inner root sheath of the hair, which has ever since retained his name.

In 1846, having passed the examination of the Royal College of Surgeons of England, he applied to Sir William Burnett for a post in the medical service of the navy, and was speedily entered on the books of Nelson's old ship, the *Victory*, for duty at Haslar Hospital, where he was under the eye of Sir John Richardson, by whom he was appointed surgeon to H.M.S. *Rattlesnake*, commanded by Captain Owen Stanley, and bound for foreign service. The life on board ship in those days was not an easy one, but he justly remarks, "it was good for me to live under sharp discipline, to be down on the realities of existence by living on bare necessities, to find out how extremely well worth living life seemed to be when one woke up from a night's rest on a soft plank, with the sky for canopy, and cocoa and weevilly biscuit the sole prospect for breakfast, and more especially to learn to work for the sake of what I got for myself out of it." During the four years of absence he worked hard in the intervals of his duties and sent home his results to the Linnæan Society, by which they were ignored, and in 1849 forwarded one paper on the Oceanic Hydrozoa to the Royal Society, which was communicated by the Bishop of Norwich on June 21st, 1849. It constituted his first introduction to the scientific world. He declined an appointment to another ship and thenceforward devoted himself to natural history. That he applied for the chair of Natural History at Toronto and that Professor Tyndall was a candidate for that of Physics is well known. By their rejection of both candidates the Canadians lost and England gained two prizes. In 1851 he was elected a Fellow of the Royal Society, being then in his twenty-sixth year. In 1854 Sir Henry de la Beche, the Director-General of the Geological Survey, offered him the post, vacated by Edward Forbes, of Professor of Palæontology and Lecturer on Natural History at the School of Mines, which he held for many years. Here he delivered in 1863 to classes of working men his lectures on Man's Place in Nature, which led to an infinite amount of discussion and objurgation, and his lectures on Ethnology and on Our Knowledge of the Causes of the Phenomena of Organic Nature. In 1863 he was appointed Hunterian Professor at the Royal College of Surgeons of England, and held the post for more than five years. He twice filled the post of Fullerian Professor of Physiology at the Royal Institution. In 1869 and 1870 he was President of the Geological Society, and in the latter year President of the British Association for the Advancement of Science, when he delivered his celebrated address on Biogenesis and Abiogenesis. At this period of his life he was what other men would have called fully engaged with the duties of his office at the Geological Museum and School of Mines, and his work during the next ten years is to be found in the transactions of the various learned bodies of which he was a Fellow; but he found time to lecture or to write on the Physical Basis of Life, on Descartes, on the Automatism of Animals, on a Piece of Chalk, on Problems of the Deep Sea, on Some of the Results of the Expedition of H.M.S. *Challenger*, on Yeast, a Treatise on Comparative Anatomy, a Treatise on Physiography, another on Hume, an exhaustive article on Birds in the "Encyclopædia Britannica," and papers, essays, and reviews too numerous to specify, but which may be seen, or are referred to, in the pages of *Nature*. For some time he occupied a seat on the London School Board, but was compelled in 1871 to resign from failing health, after having untiringly urged the claims of science as one of the subjects to be taught. In December, 1872, he was elected Lord Rector of the University of Aberdeen.

In 1883 he reached the culminating point of his career and was elected President of the Royal Society, giving in the same year the Rede Lecture at Cambridge. His incessant work in physics, chemistry, physiology, biology, and geology began now to tell upon his powers, and after serving on the Select Committee of the House of Commons on the Education, Science and Art Departments, and inaugurating the Marine Biological Institute, he was obliged to go abroad and shortly after to resign the Presidentship of the Royal Society. In 1892 he received in recognition of his high position in science and his services to the public the honourable distinction of being appointed one of Her Majesty's Privy Councillors. He had previously been honoured with the diplomas and doctorates of all the leading European Universities. The relations of Mr. Huxley with Darwin and with Darwin's hypothesis will probably hereafter be regarded as the central point on which all his work turned. Without his powerful aid, his valuable corroborative evidence, and his telling and

lucid exposition of the doctrines of Darwin, they would certainly have been far more slowly understood and accepted by those who had received no scientific training. The doctrine of the survival of the fittest had been advanced by Herbert Spencer. Mr. Huxley's own researches and observations were in the path simultaneously trodden by Wallace and Darwin. Evolution was in the air; but Darwin anticipated all his brethren by advancing the proposition that species originate by means of natural selection or through the preservation of the favoured races in the struggle for life. The value of this proposition not as a proved theory, but as a working hypothesis explaining many facts that were previously unintelligible, was instantly perceived by Huxley, who was supported by the large experience of Hooker on the botanical side, and at first by Sir Charles Lyell on the geological, though the latter observer wavered at a later period. The conclusions which that hypothesis suggested, the gradual development of all plants and animals up to man himself from some low form or forms, the necessity for the lapse of enormous periods of time, and many other considerations gave a great shock to theologians; whilst it was rejected by naturalists of great eminence like Owen and Agassiz and was entirely ignored or ridiculed by the French *savants*. But the efforts of its champions in England, aided by the free thought of the Germans, won the battle; and few if any would be found to doubt the main doctrine of evolution now.

The originality of the opinions and doctrine he advocated, and the vigour with which he sustained them, were familiar to all who attended the meetings of societies in those days, and the bruit that there was likely to be a discussion in which Owen and Huxley were to take a part was sure to fill the room. As in so many similar cases, whether in speech or in essay, the older man, with assured position and accustomed to lead, seemed at first scarcely to recognise the force and acuteness of his adversary, and was inclined to look down as from a superior height "and smiling put the question by"; but this did not depress the younger combatant, and he returned to the charge again and again. Thus in the Proceedings of the Royal Society in 1854 Mr Huxley had stated that the intestine in terebratula ends blindly in the middle line or else terminates in a distinct anus between the pallial lobes. In the second edition of his work on "Invertebrata" (1855) Professor Owen, relying on the conditions present in orbicula and lingula as on his own dissections, commented on this statement and remarked, "There may be blindness somewhere, but not, I think, at the termination of the intestine of terebratula." In his lectures on the Elements of Comparative Anatomy (1864) Mr. Huxley vindicated his accuracy by quietly observing that his statements had been fully borne out by Mr. Albany Hancock and by M. Lacaze Duthiers, two of the best minute anatomists of the day. I trust, he adds, Mr. Owen is now fully satisfied as to where the "blindness" really was in 1855. It is delightful to find after these passages-of-arms that Huxley, in his charming obituary notice of Owen in the Proceedings of the Royal Society, wrote no line that betrayed remembrance of any bitterness, but, on the contrary, bestowed all due and kind recognition of the great qualities and influence on the age of the great anatomist with whom he had so often fought.

It is not surprising that amongst the many subjects upon which he concentrated the "dry light" of his understanding theology should constitute one—perhaps, as Herbert Spencer always maintained, from inborn clerical proclivities; perhaps from irritation arising, as he once said, from the "cackle of curates in the nearest cathedral town"; and perhaps from a still deeper feeling—the discovery of truth. He pursued doctrinal theology with ardour, attempting to apply the methods of science to the Old and New Testaments alike, and judging that by reason which can only be comprehended by faith. In the late Bishop of Peterborough, Principal Wace, and Mr. Gladstone he had three formidable antagonists; but no whit dismayed he returned blow for blow, and the discussion of the story of the Gadarene pigs amused, though it scarcely edified, the ordinary reader of magazine articles. From an early date there was, he found, so much that was inexplicable and unintelligible that he coined the phrase agnosticism, and avowed himself an agnostic, terms that, although they were inoffensive enough in themselves, were confused by laity and clergy alike with atheism, and gave rise to long and bitter controversy.

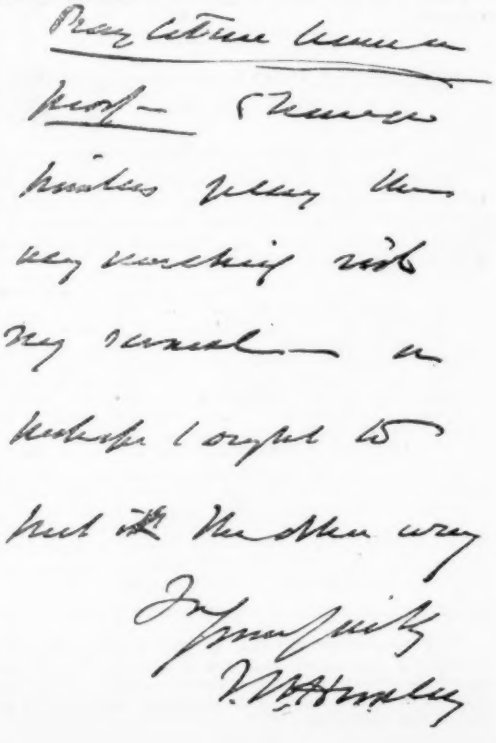
The term "agnostic," he avowed, came into his head as suggestively antithetic to the Gnostic of Church history who professed to know so much about the very things of which he was ignorant, and he took the earliest opportunity of parading it at the Metaphysical Society to show that he, too, had a tail like the other foxes, and to his great satisfaction the term took with the public.

His voice was not infrequently heard upon the social questions of the day, and he spoke with no uncertain sound, but not carelessly or without due inquiry into the merits of each case, as one or two examples which will occur to our readers at once sufficiently testify.

In person he was of moderate height, strongly but rather slenderly built, with a long head. His complexion and hair were dark, his face without a ray of colour in it. His eyes were very dark, with keen and lively expression; his jaw square, with mobile mouth and a deep dimple below the lower lip; the nose a little *retroussé*; his voice was musical; his movements were quick; his address pleasant and quiet. He tells us his mother used to say, looking at him almost reproachfully, "Ah! you *were* such a pretty boy," whence he had no difficulty in concluding that he had not fulfilled his early promise in the matter of looks.

It remains only to add that Professor Huxley occupied many positions and shone in them all. As a man of science he was at once accurate, profound, and versatile. As a speaker, lecturer, and teacher he was clear, fluent, and racy; his illustrations, drawn now from Greek or Roman history, now from the "Arabian Nights," from "Robinson Crusoe," or some nursery tale, were always apposite and amusing. As a writer his style was pellucid and forcible. As a debater and controversialist he was ready and good tempered, pugnacious but rarely vituperative—a terrible opponent, as many found who crossed swords with him. Perfectly fearless, with a singular faculty of discovering the weak point of an argument, he cared not with whom he engaged. Like Launcelot of old—"king, duke, earl, count, baron—whom he smote he overthrew." As a friend he was reliable and constant; in all the common relations of life, courteous, affable, cheerful and unpresuming. He was truly a king amongst men. His like will not soon be seen again.

We have pleasure in presenting to our readers a facsimile of part of a letter (dated Nov. 21st, 1893) from Professor Huxley, which includes his signature. It will be noted that with characteristic thoughtfulness he refrains from throwing all the blame for "the very mischief" of bad "proofs" upon the printers.



WILLIAM LEIGH, M.R.C.S. ENG., L.R.C.P. LOND.

THE sudden death of Mr. William Leigh of Chiswick, which occurred on Tuesday, June 25th, will be unexpected and sad news to a large number of his friends at Chiswick and in the profession. Mr. Leigh was educated at Epsom College and St. George's Hospital, taking the diplomas of the Royal College of Physicians of London and the Royal College of Surgeons of England in 1865. The succeeding five years he spent in the office of house surgeon and surgical registrar and chloroformist at the hospital, where he was well known and much liked. At the conclusion of his curriculum he joined his father, who had been practising nearly forty years, and continued the practice after his death about ten years later, when he succeeded to the surgeoncy of the Chiswick and Turnham-green Dispensary. William Leigh, in his education and traditions, was a thorough representative of the old-fashioned family practitioner. He possessed a sound practical knowledge of the several branches of his profession, gathered from close observation and contact with his teachers and cases in the hospital wards, and in practice, rather than from lectures and reading. A man of quiet and methodical habits, he was perhaps little known outside the sphere of his own immediate activity; but those who were brought in contact with him recognised his sterling qualities and liked him much. His wonderful uniformity of manner and undeviating regularity of conduct, with the self-confidence born of his thorough familiarity with his work, made him welcomed and trusted by his patients; but to the few who really knew him intimately his unhesitating self-sacrifice and steady devotion inspired such love and confidence as make the loss irreparable. But though his sudden decease came with such sorrow to his friends, to himself the end was apparently without suffering. He had left home for a few weeks to recruit after the strain of the early part of the year, and was enjoying the change up to the last minute, when he stepped on board a steamer to cross from Glasgow to Ireland, and with scarcely a moment's warning fell into a chair and expired in the presence of a brother practitioner, Dr. Speer of Belfast. The deceased was fifty-two years of age. At an inquest held on June 27th by Dr. J. Adams, coroner for Mid-Antrim, the jury returned a verdict of "Death from apoplexy," in accordance with Dr. Speer's evidence.

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ELECTION OF MEMBERS OF COUNCIL.

THE seventh election of Fellows to fill the vacancies on the Council of the College under the new regulations was held in the library of the Royal College of Surgeons, Lincoln's Inn-fields, on Thursday, the 4th inst., between 2 P.M. and 4 P.M. The result of the voting was as follows:—

	Votes.	Plumpers.
MR. ALFRED WILLETT	415	1
MR. FREDERICK TREVES ...	326	5
MR. H. T. BUTLIN	323	2
MR. ALFRED COOPER	295	20
DR. J. WARD COUSINS	284	4
MR. J. N. C. DAVIES-COLLEY ...	249	30
MR. A. T. NORTON	247	4
MR. H. W. PAGE	237	7
MR. WILLIAM ANDERSON	210	18

Mr. Willett was declared to be re-elected a member, and Messrs. Treves, Butlin, Cooper, and Cousins were elected members. There were 621 voting papers received.

This is by far the heaviest poll that has ever been taken in the election of Members to the Council, a result to be attributed to the facilities offered for voting by the post.

We shall report the meeting of Fellows next week.

THE Secretary of the Royal British Nurses' Association asks us to state that it is impossible that the agenda for the annual meeting should appear in this week's number of THE LANCET, but that they will be ready for publication next week.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS AND SURGEONS.—The following gentlemen passed the Second Examination of the Board in the subjects indicated at a meeting of the Examiners on Monday, July 1st:—

Anatomy and Physiology.—Henry James Taylor and William Atkin Thompson, Owens College, Manchester; Herbert Sherwell Clogg, University College, Cardiff; Thomas Wafer Byrne and Michael Robert Maher, University College, Liverpool; Arthur William Statter Curtis, Oswald Herbert Rogerson, William Henfield Galloway, Percy Ellwant Middleton, Richard Milnthorp, and Ernest Arnold Wraith, Yorkshire College, Leeds; James Phillips, Edward Mountjoy Pearse, and Franklin Cox, University College, Bristol; Irwin Browne Richardson, John Austin O'Dowd, William Alfred Henshaw, John Owen Harvey, and Richard Charles Baker Hall, Mason College, Birmingham; and Edgar Robert St. John Carr, Michigan University, U.S.A.

Anatomy only.—Charles Henry Bradbury, Owens College, Manchester, and Stanley Wellby, Oxford University and St. Thomas's Hospital.

Physiology only.—George Whittenbury White, Firth College, Sheffield; Stuart Bathgate Reid, Cambridge University; Charles Martin Mitchell and Frederick Charles Morgan, University College, Bristol; and Lionel Hugh Lewis, Guy's Hospital and University College, Cardiff.

Sixteen gentlemen were referred in both subjects, four in Anatomy only and one in Physiology only.

Tuesday, July 2nd:—

Anatomy and Physiology.—Sydney Henning Belfage and Charles Hugh Bidwell, University College, London; Alfred Gentel and Charles Dominic Leyden, St. Mary's Hospital; James Cowan, Queen's College, Belfast; Percy Dodd Pywell, St. Thomas's Hospital; Herbert Cecil Barlow, Westminster Hospital; William Ernest Amsden Worley and Egbert Coleby Morland, St. Bartholomew's Hospital; Donald Kilve Luttrell Nasmyth, Charing-cross Hospital; and John Penn Milton, King's College, London.

Anatomy only.—Robert Stanley Ransome, George Herbert Dominy, and Arthur Ernest Malaher, St. Thomas's Hospital; Owen Tredwell Atherley Phillips, University College, Cardiff; and Nicolas Buendia, St. Bartholomew's Hospital.

Physiology only.—Ernest John Distin, King's College, London; Thomas Hill Bailey, King's College, London, and Mr. Cooke's School of Anatomy and Physiology; Arthur Wellesley Penrose, Edgar Ashby, and Joseph Lewin Payne, Guy's Hospital; Walter Green and William Hodgson Park, Charing-cross Hospital; Albert John Pattison, London Hospital; John Maclean Carvell, London Hospital and Mr. Cooke's School of Anatomy and Physiology; George Beley, St. Thomas's Hospital; and Francis Augustus Pitts-Tucker, St. Thomas's Hospital and Mr. Cooke's School of Anatomy and Physiology.

Eleven gentlemen were referred in both subjects, eight in Anatomy only, and three in Physiology only.

Wednesday, July 3rd:—

Anatomy and Physiology.—Charles Gordon Watson, Arthur Oliver Bird Wroughton, and Ronald Hatfield, St. Bartholomew's Hospital; Cecil Maurice Goodbody, Ernest Frederick Charles Dowding, Bernard Featherstone Howlett, and Allan Gordon Graham, St. Thomas's Hospital; Thomas Leah, David Bellilios, William Henry Singer Liddell, and John Henry Lightfoot, St. Mary's Hospital; Leonard Dimock Saunders, King's College, London; Horace John Maurice Drummond Sale Barker and Cyril Shepherd, Guy's Hospital; William St. Aubyn Fortescue Hubbard, Charing-cross Hospital; Henry Thompson Barrow, Westminster Hospital; Frank Mayo Morris, Herbert George Frankling, and James Alfred Patrick Cullen, London Hospital; and Christian Beverley Fairbank, University College, London.

Eighteen gentlemen were referred in both subjects.

THE VICTORIA HOSPITAL FOR CHILDREN.—Their Royal Highnesses the Duke and Duchess of York received a deputation on Monday morning at York House from the Victoria Hospital for Children. In the absence of the Right Honourable the Earl Cadogan, K.G., President, who was unavoidably prevented from attending by press of business in connexion with his appointment as Lord Lieutenant of Ireland, Mr. Martin R. Smith, Chairman, and Captain Blount, R.N., Secretary of the Hospital (at whose suggestion the Infant Prince Fund had been formed), presented to their Royal Highnesses, printed on a white satin roll inclosed in a dark-blue morocco case, the names of all the contributors to the "Infant Prince Fund," which fund had been inaugurated in commemoration of the birth of the Prince, as the fourth heir in direct succession to the throne. With the sum contributed—about £1400—a cot has been endowed in perpetuity in the Victoria Hospital for the use of the sick and suffering children of the poor and presented to His Royal Highness Prince Edward of York, on the first anniversary of his birth. Their Royal Highnesses, in accepting the gift on behalf of the young Prince, expressed their great satisfaction with the amount that had been so generously subscribed, and hoped that when old enough the Prince would fully appreciate the kindly feeling which had prompted this benefaction.

LITERARY INTELLIGENCE. — Messrs. William Wood and Company, Medical Publishers of New York, have appointed Mr. Edward Arnold, 37, Bedford-street, Strand, London, sole agent for the sale of editions of their books in the United Kingdom.

A BAZAAR in aid of the funds of St. Mary's Hospital was opened by H.R.H. the Princess of Wales on June 27th at the Portman-rooms, Baker-street. Sir William Broadbent, senior physician to the hospital, received the Royal party, and after the usual ceremonies presented to the Princess Lady Broadbent, Colonel Stanley Bird, the Rev. C. J. Ridgway (chairman of the bazaar committee), Mr. Malcolm Morris, and Mr. Field, the Dean of the Medical School. A large stock of ornamental and fancy articles were offered for sale at the stalls, of which there were twenty, the most showy being the one conducted by Mrs. Field and Mrs. Anderson Critchett. The bazaar remained open for three days, and its attractions were enhanced by music, recitations, and dramatic sketches.

THE DERMATOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.—A meeting of this society was held on June 26th, Dr. Pye-Smith, F.R.S., President, being in the chair.—Dr. Shephard Taylor showed a Hypertrophied Nail which had been removed by Dr. Collier of Yarmouth from a woman's thumb. It was about three inches in length and nearly straight; it had been growing for eleven years, and had originated after an accident.—Dr. Eddowes showed a woman with considerable Hypertrophy of the Nails of both Great Toes; they were curved like a ram's horn, and had not been cut for the last twenty-five years.—Dr. Stowers showed a young woman suffering from an Affection of the Nails, the matrix having receded from the nail, which, as it grew, became curved and brittle, similar to the condition seen in eczema and psoriasis, although there was no evidence of either disease in this case. The following cases were also exhibited:—By Dr. Eddowes, Angiokeratosis of the Right Leg; by Mr. Bidwell, a Rodent Ulcer of the Thigh; and by Dr. Abraham, a case of Bromide Rash in a woman aged twenty-six years who had been taking bromide on and off for thirteen years.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Friendly Societies Bill.

THIS Bill, which incorporates a number of the recommendations of the Royal Commission on the Provision for the Aged Poor, has been passed through both Houses of Parliament as an unopposed measure.

Food and Drugs Adulteration.

The Select Committee of the House of Commons on this subject, which has been taking evidence during last session of Parliament and this, held a meeting on Tuesday, July 2nd, when it was determined to report the evidence taken to the House, and suggest that the inquiry should be proceeded with in another session.

Factories and Workshops Bill.

The Grand Committee on Trade at its meeting on Monday, July 1st, completed the consideration of the Factories and Workshops Bill. At its previous meeting it dealt with a number of interesting points. For instance, it determined, on the suggestion of Mr. Asquith, to insert a proviso prohibiting for the future the use of underground bakeries unless they have been used as such before the passing of the Act. Mr. Asquith assured the Committee that this proviso will not interfere with trade, and intimated that in its favour there was a consensus of opinion among both masters and workmen. Mr. John Burns put forward the suggestion that in order to meet the case of existing underground bakehouses the Home Secretary should fix a date beyond which they should not be allowed to continue. Clause 25 of the Bill prohibited the use of lead or arsenic in any factory or workshop in the process of tinning or enamelling metal hollow-ware cooking utensils, but Mr. Asquith said he did not attach much importance to the clause, and the Committee decided to strike it out. At the final meeting, on Monday, July 1st, a considerable amount of time was spent over Clause 30, which in its original form provided that in every factory and workshop in which the business of making wearing apparel was carried on the temperature should be kept up to not less than 60° F. Mr. Hayes Fisher, acting on behalf of Mr. Bousfield, moved to extend the provision to all factories and workshops. Mr. Asquith said that the clause had been confined to places where wearing apparel was made—first, because it was in respect of those places that by far the larger number of complaints was made; and, secondly, because it was thought it would not be possible to apply the same figure to every factory. On further consideration, however, he had come to the conclusion that it would be desirable not to insert a fixed and invariable minimum temperature, and he was prepared to accept the proposed extension, as well as an amendment standing in the name of Mr. Gerald Balfour to insert the words "adequate measures shall be taken for securing and maintaining a reasonable temperature." The Committee agreed to this course, so the provision was made for "a reasonable temperature" in all factories and workshops. Sir Charles Dilke suggested the introduction of words with regard to ventilation, but it was felt by the Committee that in view of the provisions of the principal Act they were unnecessary. When the clauses in the Bill had all been gone through, Mr. Asquith made an appeal to members who had given notice of new clauses not to move them, but to allow the Bill to be regarded as complete in the meantime. This appeal had special reference to a number of new clauses dealing with half-timers, which were certain to have raised many points of controversy and occupied a considerable amount of time. Yielding to Mr. Asquith, the members concerned withdrew their proposals, with the result that at the close of the sitting the Chairman of the Committee found himself in a position to report the Bill to the House.

Hospitals and Sanitation in India.

A Parliamentary paper has been issued giving a statement with regard to the moral and material progress and condition of India during the year 1893–94, a large portion of which is devoted to the subjects of hospitals and sanitation. It says, *inter alia*, that the number of hospitals and dispensaries has increased from 1411 in 1886 to 2018 in 1893, that the number of in-patients treated has increased from 243,000 to 327,000, and that the total of in-patients and out-patients has increased from 10,309,000 to 17,075,000. The number of successful vaccinations has increased from 4,951,000 in 1886 to 6,716,000 in 1893; of this latter number two and a half millions were infants under one year, and three millions more were children between the ages of one and six years. Later there occurs the following passage: "Fevers are the great scourge of Indian populations; against fever quinine is the best known remedy; cinchona gardens have for years been established on the Sikkim and the Nilgiri Hills; quinine is made now at both these places by a new and simple process; supplies of the medicine are sent thence to hospitals and sold to the public; and during the last few years thousands of pounds of quinine have been made up into three-grain packets for sale to the public at local post-offices at a cost of one pice (less than a farthing) per packet. In 1893–94 between three and four millions of these packets were sold in Bengal alone." On the subject of sanitation, the report says that the work of procuring the regular registration of deaths and births has been diligently prosecuted throughout British India. Computations based on the census results of 1881 and 1891 have been held to justify an estimate that the average birth-rate of all India over a series of years is about 48 per 1000, and the average death-rate is about 39 per 1000. Among the native populations the great majority of deaths are ascribed to fever in all years, but the death-rate from zymotic diseases shows great variation, due apparently in great measure to climate. The reported cholera deaths for British India were 269,862 in 1888, 417,017 in 1889, 291,202 in 1890, 582,430 in 1891, 724,015 in 1892, and 216,827 in 1893. Much attention, it is added, has been given to improving the sanitary condition of pilgrims and of the crowds at great places of religious resort.

Inquiry as to Cause of Death.

On the motion of Sir Seymour King, the House of Commons agreed, on Tuesday, July 2nd, to present an address to Her Majesty for a "return of the report of an inquiry, ordered by the Secretary of State for the Home Department, into the causes of the death of a patient named Thomas Weir at St. Ann's Heath, Virginia Water, held by Mr. Gully, Q.C., assisted by Dr. George H. Savage."

Distress for Want of Employment.

The Select Committee on this subject has stopped its inquiry and presented a short report, containing one or two suggestions of minor importance and recommending the appointment of a committee in the new Parliament to complete the inquiry. The evidence already taken will be published as a Parliamentary paper.

BOOKS ETC. RECEIVED.

ALCAN, FÉLIX, Boulevard Saint-Germain, Paris.
Dictionnaire de Physiologie. Par Chas. Richet. Tome premier: A—B. Fascicules I. et II. 1895.

BAILLIÈRE, J. B., ET FILS, Paris.
Formulaire des Spécialités Pharmaceutiques. Par Dr. M. Gautier et F. Renault. 1895. pp. 297.

BAILLIÈRE, TINDALL, & COX, King William-street, Strand, London.
Diphtheria and its Associates. By Lennox Browne, F.R.C.S. Edin. Illustrated. 1895. pp. 272. Price 16*s.*

CHURCHILL, J. & A., New Burlington-street, London, S.W.
A Manual of Botany. By J. R. Green, F.R.S., Sc.D., F.L.S. Vol. I. Morphology and Anatomy. 1895. pp. 398. Price 7*s.* 6*d.*
Myxœdema and the Thyroid Gland. By John D. Gimlette, M.R.C.S., L.R.C.P. Lond. 1895. pp. 128. Price 5*s.*

FISCHER, G., Jena.

Handbuch der Speciellen Therapie innerer Krankheiten. Herausgegeben von Dr. F. Penzoldt und Dr. R. Stintzing. 19.–20. Lieferung. 1895.

GALE & POLDEN, Amen-corner, Paternoster-row, London, E.C.

The Art of Breathing as applied to Physical Development, with Respiratory Exercises for both Children and Adults. By A. L. Hoper-Dixon, Surgeon-Captain, Army Medical Staff. 1895. pp. 30. Price 2s. 6d.

GOVERNMENT PRINTING OFFICE, Washington.

Annual Reports of the Supervising Surgeon-General of the Marine Hospital Service of the United States for the Fiscal Year 1893. Vol. I. and II.

HIRSCHWALD, A., Berlin.

Die Zuckerkrankheit und ihre Behandlung. Von Professor Dr. C. Noorden. 1895. pp. 212.

LEWIS, H. K., Gower-street, London, W.C.

Hygiene and Public Health. By Louis C. Parkes, M.D., D.P.H. Lond. Fourth edition. Illustrated. 1895. pp. 531. Price 10s. 6d.

Mentally deficient Children: their Treatment and Training. By G. E. Shuttleworth, B.A., M.D. 1895. pp. 140. Price 4s.

LONGMANS, GREEN, & Co., London.

Mind and Motion and Monism. By the late Geo. J. Romanes, M.A., LL.D., F.R.S. 1895. pp. 170. Price 4s. 6d.

Text-book of Forensic Medicine and Toxicology. By Arthur P. Luff, M.D., B.Sc. Lond. In two volumes. Vols. I and II. 1895. Price 24s.

REDMAN, F. J., 11, Adam-street, Strand, London.

A Pictorial Atlas of Skin Diseases and Syphilitic Affections, in the Museum of the Saint Louis Hospital, Paris, with Explanatory Woodcuts and Text. Edited by J. J. Pringle, M.B., F.R.C.P., Middlesex Hospital, London. Part I. 1895. Price 10s. 6d.

SAUNDERS, W. B., Walnut-street, Philadelphia.

The Care of the Baby: a Manual for Mothers and Nurses. By J. P. C. Griffith, M.D. 1895. pp. 392.

SIMPKIN, MARSHALL, HAMILTON, & Co., London.

A Text-book of the Science and Art of Bread-making. By William Jago, F.I.C., F.C.S. 1895. pp. 648.

SMITH, ELDER, & Co., Waterloo-place, London.

Dictionary of National Biography. Edited by Sidney Lee. Vol. XLIII. Owens-Passelewe. 1895. pp. 446.

SOCIETÀ EDITRICE DANTE ALIGHIERI, Roma.

Trattato di Patologia e Terapia Chirurgica Generale e Speciale. Professor F. Durante. Vol. I., Lire 5. 1895.

SOCIÉTÉ D'ÉDITIONS SCIENTIFIQUES, Paris.

La Cure de Barèges. Par le Dr. J. Bétous. 1895. pp. 146.

Mémento Formulaire de Posologie et Thérapeutique Infantiles. Par le Dr. H. Dauchez. 1895. pp. 96.

Manuel de Gymnastique. Par A. G. Fontana. 1895. pp. 51.

Le Moyen Age Médical. Par Dr. E. Dupouy. 1895. pp. 372.

La Prostitution dans l'Antiquité. Par le Dr. E. Dupouy. Troisième édition. 1895. pp. 219.

SWAN SONNENSCHEIN & Co., London.

The Cell Outlines of General Anatomy and Physiology. By Dr. Oscar Hertwig. Translated by M. Campbell, and edited by Henry J. Campbell, M.D. Illustrated. 1895. pp. 368.

WRIGHT, J., & Co., Bristol.

Leprosy: in its Clinical and Pathological Aspects. By Dr. G. A. Hansen and Dr. C. Looft. Translated by Norman Walker, M.D., F.R.C.P. Edin. With Photographs and Plates. 1895. pp. 162. Price 10s. 6d. net.

Vaccination Systems of India; by S. V. Kantak, L.M., Superintendent of Vaccination, Presidency Circle, Bombay (reprint from the Indian Medico-Chirurgical Review, Bombay) (N. K. Rao and Co., Tardeo, Bombay; and Baillière, Tindall, & Cox, London; 1895).—Catechism Series; Materia Medica; Part VI. (E. and S. Livingstone, Edinburgh); price 1s.—The Great Eastern Railway Company's Tourists' Guide to the Continent; edited by Percy Lindley; illustrated and with Maps (published at 30, Fleet-street, 1895); price 6d.—Annual Report of the Department of Health of the City of Chicago for the Year ended December 31st, 1894; A. R. Reynolds, M.D., Commissioner of Health (Cameron, Amberg, and Co., Chicago, 1895).—Apologia pro Oscar Wilde; by Dal Young, M.A. Oxon. (Wm. Reeves, Fleet-street, London, E.C., 1895); price 1s.—Magazines for July: The Strand Magazine, The Picture Magazine, Illustrated English Magazine, Hearth and Home, Boy's Own Paper, Girl's Own Paper, Leisure Hour, Sunday at Home, Pall Mall Magazine, Chapman's Magazine London Home, Twentieth Century, Westminster Review.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, for publication in the next number.*

ADAMS, P. E., M.R.C.S., L.R.C.P. Lond., has been appointed Junior House Physician to the North-Eastern Hospital for Children, Hackney-road.

CASHMAN, JAS. P., has been appointed Assistant Medical Superintendent of the Cork District Lunatic Asylum.

CHRISTMAS, C. D., M.D. Brux., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Streatham Sanitary District of the Clapham and Wandsworth Union, vice Barker, resigned.

CRAIG, J. F., M.D., C.M. Aberd., has been appointed Medical Officer to the Post Office, Birmingham.

DAVIES, ALFRED O., L.R.C.P., L.R.C.S. Edin., L.M., M.R.C.S., has been appointed Medical Officer of Health for the Machynlleth Union District.

DODD, S., M.B., B.Ch. Irel., has been appointed Medical Officer of Health for Golborne.

DOUTY, EDWARD H., M.A., M.B., B.C., M.R.C.S., L.R.C.P., has been appointed Assistant Surgeon to Addenbrooke's Hospital, Cambridge.

EATON, J., M.R.C.S., L.M., has been appointed District Medical Officer by the Belvoir Rural District Council.

FAUSSET, A. G., M.B., B.Ch. Dub., has been appointed Medical Officer for the Second Sanitary District of St. George, Hanover-square, London.

GARLAND, EDWARD C., L.R.C.P. Edin., M.R.C.S., has been reappointed Medical Officer of Health for the Borough of Yeovil.

HOWIE, ALEXANDER, M.B., C.M. Glasg., has been appointed Medical Officer for the Alberbury Sanitary District of the Atcham Union.

HUGHSTON, ROBERT W., M.B., Ch.B. Melb., has been appointed, *pro tem.*, Public Vaccinator for Fern Tree Gully, Victoria, Australia.

MACDONALD, J. A., M.B., M.S. Glasg., has been appointed Medical Officer for Harston, Knipton, and Croxton, by the Belvoir Rural District Council.

MALCOMSON, J. A., M.D., M.Ch. Irel., has been appointed Medical Officer of Health to the Eston Urban District Council.

MARTIN, ARTHUR W., L.R.C.P., L.R.C.S., D.P.H. Edin., has been reappointed Medical Officer of Health for the Gorton Urban District.

MILLER, J. M., M.B., C.M., D.P.H. Glasg., has been appointed Medical Officer of Health for the Burgh of Largs.

MORRIS, FRED. H., M.D. St. And., M.R.C.S., has been appointed Medical Officer of Health to the Wellingborough Rural District Council.

NOTLEY, W. J., M.D. Lond., L.R.C.P., L.R.C.S. Edin., has been appointed Medical Officer to the Post Office, Birmingham.

O'CONNOR, C. J., L.R.C.P., L.M., F.R.C.S. Irel., has been appointed Dispensary Medical Officer for the Celbridge District of the Union, Celbridge.

PALMER, A. M., L.R.C.P., L.M. Edin., M.R.C.S., has been appointed Medical Officer of Health to the Whittington Urban District Council.

PARTINGTON, WILLIAM, M.B., C.M. Glasg., has been appointed District Medical Officer by the Tunstall Urban District Council.

PELLY, HUNTLEY N., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer for the Second Sanitary District of the Winslow Union, vice Walter, resigned.

PRIESTLEY, JOSEPH, M.B., C.M. Edin., M.R.C.S., has been appointed Medical Officer of Health for the Parish of Lambeth.

QUARRY, M. H., M.B., B.Ch. Irel., has been appointed Medical Superintendent of the Lambeth Infirmary, vice Lloyd.

QUENNELL, ARTHUR, M.R.C.S., L.R.C.P. Lond., has been appointed Senior Resident Medical Officer to the Evelina Hospital for Sick Children, Southwark-bridge-road, S.E.

RIDING, EDWIN, M.R.C.S., has been appointed Medical Officer of Health to the Repton Rural District Council.

ROSS, JAS. M., M.B., C.M., B.Sc. (Public Health), F.R.C.S. Edin., has been appointed Medical Officer for the Burgh of Moffat, vice Grange, resigned.

SCANLAN, W. T. A., M.B., B.Ch. Irel., has been appointed Assistant Medical Superintendent of the Cork District Lunatic Asylum.

SLY, EDWIN, M.B. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Junior Resident Medical Officer to the Evelina Hospital for Sick Children, Southwark-bridge-road, S.E.

SOMERSET, EDWARD, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer of Health for the Oundle Union District, vice Calcott, resigned.

WALKER, E. G. A., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer of Health to the Wrotham Urban District Council.

YOUNG, RALPH, M.D. Durh., L.M., M.R.C.S., has been appointed Medical Officer of Health for the Royton Urban Sanitary District, vice Gardner, resigned.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BRADFORD INFIRMARY AND DISPENSARY.—Honorary Physician.

BRITISH INSTITUTE OF PREVENTIVE MEDICINE, Great Russell-street, London.—Assistant Bacteriologist in the Antitoxin Department. Salary £150 a year.

CANCER HOSPITAL (free), Fulham-road, S.W.—House Surgeon for six months. Salary at the rate of £50 per annum, with board and residence.

CARMARTHEN UNION.—Medical Officer and Public Vaccinator for the Conwil district of the Union. Salary as Medical Officer £60 per annum, and the fees for successful vaccination. Applications to the Clerk to the Guardians, Hall-street, Carmarthen.

CHILDREN'S HOSPITAL, Nottingham.—House Surgeon (non-resident), for six months. Salary at the rate of £100 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria-park, E.—Resident Medical Officer. Salary £100 per annum, with board, &c.

COUNTY ASYLUM, Gloucester.—Third Assistant Medical Officer, unmarried. Salary £105 per annum, with board (no stimulants), lodging and washing.

COVENTRY AND WARWICKSHIRE HOSPITAL, Coventry.—Resident Assistant House Surgeon, for six months. Salary £15, with board (exclusive of beer, wines, and spirits), residence, washing, and attendance.

GUY'S HOSPITAL MEDICAL SCHOOL, London.—Lecturer on Public Health.

HIGHWORTH AND SWINDON UNION.—Medical Officer and Public Vaccinator for District No. 1 of the Union. Salary as District Medical Officer £80 per annum (inclusive of all drugs and medicines), with the usual extra medical fees for midwifery and surgical cases. Applications to the Clerk to the Guardians, Cricklade-street, Swindon.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physician.

HUDDERSFIELD INFIRMARY.—Junior House Surgeon. Salary £40 per annum, with board, lodging, and washing.

METROPOLITAN ASYLUMS BOARD.—Assistant Medical Officer (unmarried), at the North-Western Hospital for Fever Patients, Haverstock-hill, N.W. Salary £160 per annum for the first year, £180 for the second year, and £200 for the third and subsequent years of service, with board, lodging, attendance, and washing. Applications to the Offices of the Board, Norfolk-street, Strand, London.

NATIONAL SANATORIUM FOR CONSUMPTION AND DISEASES OF THE CHEST, locally situated at Bournemouth.—Resident Medical Officer. Salary £80 per annum, with board, lodging and washing.

NEWPORT AND MONMOUTHSHIRE INFIRMARY, Newport, Mon.—House Surgeon. Salary £100 per annum, with board and residence. No stimulants provided.

PARISH OF CAMBERWELL.—Temporary Assistant Medical Officer for four weeks, at two and a half guineas per week, with board, lodging, and washing. Applications to the Clerk to the Guardians, Guardians' Offices, 29, Peckham-road, S E.

QUEEN'S JUBILEE HOSPITAL, Earl's-court, London.—Surgeon.

ROYAL BERKS HOSPITAL, Reading.—Third or Assistant Medical Officer for six months. Board, lodging, and washing provided.

STOCKPORT INFIRMARY.—Junior Assistant House Surgeon for six months. Board and residence provided, and an honorarium of £10 given, after six months satisfactory service.

SUFFOLK GENERAL HOSPITAL, Bury St. Edmunds.—House Surgeon. Salary £100 a year, with board, lodging, and washing.

UNIVERSITY OF GLASGOW.—Two Examiners in Medicine.

WILLITON UNION, SOMERSET.—Medical Officer and Public Vaccinator for the Stogursey District of the Union. Salary £80 per annum, together with the extra fees for operations and services, and for midwifery and vaccination cases, provided by the orders of the Local Government Board. Applications to the Clerk, Williton, Somerset.

LONDON HOSPITAL MEDICAL COLLEGE.—In our issue of the 22nd ult. the salary of the Senior Demonstrator of Physiology should have been £150 a year, instead of £100, and a proportion of the fees paid for classes.

Births, Marriages, and Deaths.

BIRTHS.

BARNES.—On May 31st, at the Public Hospital, George Town, Demerara, the wife of Walter S. Barnes, M.D. Irel., M.R.C.S. Eng., of a son.

BATTAMS.—On June 28th, at 123, Lavender-hill, S.W., the wife of J. Scott Battams, M.R.C.S., of a son.

BAYLOR.—On June 25th, at Chilton House, Ash, Dover, the wife of Edward A. C. Baylor, B.A., M.D. Dubl., T.C.D., of a son.

COOPER.—On June 29th, at Southwood, Birdhurst-road, South Croydon, the wife of Harry Joseph Cooper, M.A., M.B. Cantab., of a son.

MARRIAGES.

HOLMES—EDGELL.—On June 25th, at St. James's Church, Bury St. Edmunds, Thomas D. Holmes, M.D. Edin., eldest son of Francis Holmes, of Upper Grange, Stroud, Glos., to Mabel C. Edgell, only daughter of the late Capt. H. J. Edgell, 21st Fusiliers, Bury St. Edmunds.

LANGRIDGE—HOWARD-BARRETT.—On June 26th, at St. Pancras Church, by the Rev. H. L. Paget, Vicar of the parish, assisted by the Rev. C. F. Farrar, cousin of the bride, Francis Barton Langridge of Hampton Lodge, Highgate, youngest son of Henry Langridge of 48, Gordon-square, W.C., to Irene, eldest daughter of Howard Barrett of 49, Golden-square.

ROBERTSON—KEETON.—At Southwell, Albany, Cape Colony, on June 6th, by the Rev. W. R. Bruce, C. Robertson, L.R.C.P., M.R.C.S., J.P., Railway Medical Officer, Alicedale Junction, to Kate, second daughter of W. P. Keeton, Esq., J.P. of Lombard's Post, Southwell.

RUSSELL—RITCHIE.—On June 15th, at the Free Middle Church, Perth, by the Rev. J. Calder Macphail, D.D., Pilrig, assisted by the Rev. D. W. Kennedy, Perth, and the Rev. A. C. Watt, Comrie, William Russell, M.D., F.R.C.P.E., to Beatrice Ritchie, M.D., elder daughter of James Ritchie, C.E., Perth.

SINCLAIR—SCHRADER.—On June 27th, at St. Mary's Episcopal Church, Dunblane, Perthshire, W. Vernor Sinclair, L.R.C.S. and P. Edin., youngest son of the late Surgeon Sinclair, the 93rd Highlanders, to Bessie, youngest daughter of the late George Schrader, Glasgow.

DEATHS.

BARRETT.—On July 1st, at his residence, Appleton Mold, Stratford-on-Avon, Charles Albert Barrett, M.R.C.S. Eng., aged 63.

DAVIES.—On June 16th, at 23, Finsbury-square, E.C., Joyce Caroline, the dearly loved and only daughter of Arthur Tempter and Alice Davies.

DRAKE.—On June 27th, at his residence, Rownhams, Southampton, Arthur John Drake, L.R.C.P. Lond., M.R.C.S., late of Stratford, Essex, aged 46 years.

NELHAM.—On July 2nd, at Warwick-street, Eccleston-square, S.W., Ambrose Nelham, M.R.C.S., L.S.A., aged 62.

PICK.—On June 28th, at 15, Oxford-park, Ilfracombe, Joseph Peyton Pick, M.R.C.S., L.S.A., aged 87 years.

SCATLIFF.—On June 16th, at Macaulay House, Macaulay-road, Clapham-common, S.W., Harriet, the devoted wife of the late J. P. Scatliff, M.D., formerly of 132, Sloane-street, S.W., aged 70.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 4th, 1895.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Dry Bulb	Wet Bulb	Solar Radiation Vacuo.	Maximum Temp. Shade.	Min. Temp	Rainfall.	Remarks at 8.30 A.M.
June 28	29·89	S.W.	67	59	127	78	56	...	Bright
,, 29	29·80	S.W.	65	61	119	70	60	0·04	Cloudy
,, 30	29·72	S.W.	63	58	121	73	58	...	Cloudy
July 1	29·69	S.W.	64	60	121	73	59	...	Cloudy
,, 2	29·52	S.W.	63	57	123	73	56	0·19	Raining
,, 3	29·98	N.W.	63	56	118	71	56	...	Cloudy
,, 4	30·20	N.	63	56	117	68	55	...	Cloudy

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY.—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (1 P.M.), St. Mark's (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynecological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.).

TUESDAY.—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1.30 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Gt. Northern Central (2.30 P.M.).

WEDNESDAY.—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Gt. Ormond-street (9.30 A.M.).

THURSDAY.—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (2 P.M.), Soho-square (2 P.M.), North West London (2 P.M.).

FRIDAY.—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.).

SATURDAY.—Royal Free (9 A.M. and 2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (9.15 A.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), Cancer (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

THURSDAY.—BRITISH GYNÆCOLOGICAL SOCIETY.—Specimens by Dr. Purcell and Dr. Bantock. Adjourned Discussion on Dr. Fancourt Barnes's paper on "Some Difficulties in the Use of the Curette." Dr. Halliday Croom: A case of Glycosuria complicating a large Ovarian Cyst. Dr. Sambon of Rome will exhibit and explain some Roman Antiquities relating to Obstetrics and Gynæcology, mostly votive offerings dug up in Italy.

NEUROLOGICAL SOCIETY OF LONDON (National Hospital for Paralysis, Queen-square).—8.30 P.M. Dr. Risien Russell: Congenital Defect of the Cerebellum in a Puppy.—Dr. Colman: Disease or Defect of the Cerebellum in a Cat.—Dr. Alex. Bruce: (1) Acute Neuritis in Optic and Posterior Tibial Nerves, and Peculiar Degenerative Changes of Muscle; (2) Syringomyelia; (3) Double Facial and Double Auditory Paralysis from Syphilis of the basal Dura Mater and Bones.—Dr. Macintosh and Dr. Aldren Turner: (1) Exhibition of Tumours involving the Capsulo-thalamic Region; (2) Two cases of Syringomyelia; (3) A Rare Form of Infiltrating Glioma of the Spinal Cord.—Dr. G. Newton Pitt: Two Spinal Cords with Posterior Sclerosis associated with Profound Anæmia.—Dr. Hubert Bristowe: New Growth of Lumbar Cord.—Dr. F. W. Mott: Preliminary Note on the Chemistry of Degeneration of the Central Nervous System. Dr. Prandi (of Buda Pesth) will exhibit Specimens illustrating some cases of Alteration of the Posterior Columns in Pseudo Tabes, Arterio-Sclerosis, Diabetes, and Senile Alterations.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEDNESDAY.—NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Bloomsbury).—3 P.M. Lecture by Dr. Beevor.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-sq., W.C.).—5 to 6 P.M. Dr. Morgan Dockrell: Syphilis.

SATURDAY.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-sq., W.C.).—5 P.M. Dr. Morgan Dockrell: Pityriasis Rubra Pilaris.

Notes, Short Comments & Answers to Correspondents.

EDITORIAL NOTICE.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side only of the paper.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index for the current half-year was given in last week's issue, which completed the first volume of the year 1895. The practice of supplying loose copies has been discontinued, the Index having been placed in the centre of the journal, whence it can easily be detached, and placed either at the beginning or at the end of the volume.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1895 are now ready. Bound in cloth, gilt lettered, price 18*s*.

Cases for binding the half year's numbers are also ready. Cloth, gilt lettered, price 2*s*.

To be obtained on application to the Manager, accompanied by remittance.

THE LANCET AND ACCIDENT INSURANCE.

A LITHOGRAPHED CIRCULAR LETTER, emanating from an office in the Strand district, is being sent to members of the medical profession, offering to supply them with THE LANCET, in conjunction with an accident insurance policy. The Proprietors of THE LANCET are in no way connected with the scheme (of which they cannot approve), and were not aware of its inception until their attention was called to it by a reader who had received the circular.

FEES FOR CONFINEMENTS.

To the Editors of THE LANCET.

SIRS,—Will you kindly give your opinion as to what amount of attendance following a confinement is covered by the ordinary fee? In the particular case which I have in mind the confinement fee was paid within a day or two of delivery. Subsequently some fifteen or sixteen visits were necessary, owing not to any special complications, but to the general tardiness of recovery and to the prematurity of the child. In addition to this an attack of acute mastitis occurring in the fourth week necessitated two or three more visits. Your advice in such cases will be much appreciated.

I am, Sirs, yours faithfully,

June 29th, 1895. A SUBSCRIBER.

*** Something depends on the means of the patient. If these are good any attendance after the ninth day might reasonably be charged £.—ED. L.

THE LIABILITY OF FRIENDLY SOCIETIES FOR NEGLIGENCE OF THEIR MEDICAL OFFICER.

THIS question was raised in an action lately brought by Richard Barnes, a clerk, against the Lincoln Oddfellows Medical Association to recover damages in respect of a case of miscarriage in his wife attended by the medical officer of the Association. Certain very important points of law touching the liability of such societies for the negligence of their medical officers were reserved, on which judgment has just been delivered at the Lincoln County Court by his Honour Judge Shortt. The following is the report of the *Yorkshire Post* on these points. It would be well if the appeal granted by the judge were acted on, as they are of great interest both to friendly societies and the medical profession.

"On the points of law involved plaintiff contended that the defendants were liable on one, if not both, of two grounds—(1) by reason of their breach of contract to supply efficient medical attendance in accordance with the rules; (2) on the ordinary ground of the liability of a master for the negligent act of his servant. For the defendants it was replied—(1) that the contract to supply efficient medical attendance was fulfilled by securing for the members a fully qualified medical attendant; and (2) that they were not liable on the second ground, because the relation of master and servant could not be held to exist between the society and its medical officer, as that relation exists only in cases where the employer can not only order that a certain thing should be done, but can also direct and control the manner in which it is to be done. It was contended (thirdly) on behalf of the defendants that as to midwifery cases there was no contract with the society, nor did the society assume any obligation or interfere in such cases at all. His Honour held that the defendants could not be held liable either in contract or *in tort*. He considered that their general contract to provide efficient medical attendance was fulfilled by securing to the members the services of a fully-qualified medical attendant. It was admitted by counsel for the plaintiff that the defendants could not be charged with negligence in their appointment of him or in continuing to retain him. His Honour did not think it necessary to decide the abstract point (hitherto undecided in this country) whether the relation of master and servant could be said to exist in such a case as the present; for he was of opinion that, in dealing with midwifery cases at any rate, the medical officer could not be regarded as the servant of the society, as they could not order him to treat at all. That this particular case was a "midwifery" case was found by the jury—so far as the question was one of fact. So far as it was one of law he answered it in the same way. On this ground he held that the defendants were not liable, and that the plaintiff's remedy was against the doctor alone. If leave to appeal were necessary he should grant it willingly, as the points of law involved were of some nicety and difficulty. Judgment for the defendants, but without costs."

Greenhorn.—We do not know of any reliable book giving the exact information sought. In one or two such books the descriptions of symptoms are decidedly incorrect, and calculated to raise unnecessary alarm. In no very long time the services of a medical man will be required. Why not see the selected practitioner and state the difficulty now?

Mr. R. J. Wylie should consult a reliable advertising agent.

A QUESTION OF ETHICS.

To the Editors of THE LANCET.

SIRS,—On March 15th A and B met in consultation. On July 17th B is called by the patient to attend him. Prior to seeing the patient B inquires from patient's friends if A is aware that B is to be called in. They reply "that a letter on the subject has been written and forwarded to A." The case is of a chronic nature. B calls on A the same evening and reports what has taken place, A at that time making no objection whatever. Has B in any way acted unprofessionally?

I am, Sirs, yours faithfully,

New Zealand. ORNITHORHYNCHUS.

*** B's conduct appears to us irreproachable. He inquired if A had been made aware of the intention to call him in and he called on A after the visit. We cannot see, from the facts laid before us, what more could be expected from him, or what more he could do.—ED. L.

WANTED, A HOME FOR AN INEBRIATE.

To the Editors of THE LANCET.

SIRS,—A gentleman who has lately become an inebriate wants to enter a home for inebriates. He is eighty years of age and has an income of £80 a year. Will any of your readers kindly suggest such a place which would be suited to his limited income?

I am, Sirs, yours faithfully,

June 30th, 1895. R. E. P. S.

"HOUSE SURGEONS AND CORONERS' INQUESTS."

To the Editors of THE LANCET.

SIRS,—May I be allowed, in reference to your recent annotation under this title, to call attention to what I consider is another hardship that we house surgeons have to bear in reference to coroners' inquests? We are called to give evidence at every inquest that is held on patients dying in hospital, no matter what is the cause of death, however evident it may be. Now, had many of these occurred outside, the medical man in attendance would not be called just because he would have to be paid, but we, poor wretches, who have to give evidence for nothing, always have to appear. Now, if the coroner calls us, it must be because he considers that our evidence is necessary; that being so, why does he not call the general practitioners in similar cases? The case I have particularly in view was one in which a child was severely burnt and died in two days, and yet the medical man who attended was not called at the inquest. We are always called in these cases.

I am, Sirs, yours truly,

June 23rd, 1895. H. S.

Gratis.—The case is peculiar. It seems to us that our correspondent's first step should be to complain to B. of the arrangement by which he sees the patients of other medical men. The fact that our correspondent is not on friendly terms with A. and B. does not affect his right or his duty to protest against such a system. We cannot say that B. is acting unprofessionally so long as no objection is made; but we should think otherwise if he disregarded a respectful protest from a neighbouring practitioner, whose patients he attended at the call of a midwife. Neither can we recommend our correspondent to attend cases for nothing by way of checkmating the objectionable arrangement described. The first thing to be done is to point out to his neighbour that he is, perhaps unwittingly, seeing the patients of other medical men.

"THE TITLE OF 'DR.'"

To the Editors of THE LANCET.

SIRS,—One statement made by MR. FEENY in your last issue is not correct. In Germany, Switzerland, &c. every medical man who wishes to practise has to pass the State examination. This gives him the title of Arzt (Médecin), and the right to practise as such; but no one is allowed to call himself a doctor until he has passed the M.D. examination of a university, which is a different thing altogether. Whether the M.D. is a German, Swiss, or a foreign one matters little; because the M.D. alone does not give the right to practise, and all medical men, with very few exceptions, pass both examinations. If anyone abroad dared to propose, like MR. FEENY, that the State examination should give to a man the right to call himself a doctor he would undoubtedly be lynched by the Rector Magnificus and the whole professorial staff of the nearest university. I am, Sirs, yours obediently,

Harley-street, W., July 2nd, 1895. J. KESER.

To the Editors of THE LANCET.

SIRS,—I must protest against the statement which appears in a letter signed "Not L.S.A." in your issue of the 29th ult.—that "the L.S.A. is by right entitled to call himself 'Dr.'" An L.S.A. is an apothecary, and nothing more, and has no more right to call himself "Dr." than a curate has to call himself "Archbishop of Canterbury." If the licence of the Society of Apothecaries gives its holder a kind of legal right to act as a general practitioner it gives its holder no right to assume distinctions that a *college* or a *university* alone can give. It is quite time that the Society of Apothecaries of London and the Apothecaries Hall of Dublin ceased to grant their licences, which are not now wanted, the pharmaceutical societies having supplied the want.

I am, Sirs, yours faithfully,

Erdington, July 2nd, 1895. WILLIAM DONOVAN, M.D.

To the Editors of THE LANCET.

SIRS,—Your correspondent "Not L.S.A." repeats a statement which has on two or three occasions been recently made—viz., that "the L.S.A. is by right entitled to style himself 'Dr.'" It would be interesting to know on what basis this assertion rests. I know that some of the dictionaries give the meaning of "doctor" as "a physician, an apothecary, one who has taken the highest degree in the faculties of divinity, law, physic, or music," but I should like to know what "right" the L.S.A. has to the title which is not equally that of any other licentiate in medicine. Perhaps "Not L.S.A." will explain.

I am, Sirs, yours truly,

July 2nd, 1895. A. Z.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of the 29th ult. "Not L.S.A." writes that "the L.S.A. is by right entitled to style himself 'Dr.'" May I ask him kindly to give his authority for the statement, as it does not appear to be generally known? I am, Sirs, yours faithfully,

July 1st, 1895. B. F.

THE SMALLWOOD HOSPITAL, REDDITCH.

Dr. Herbert Page.—The rule is open to the objection made by our correspondent; but it will not necessarily be abused, and there will be no harm in assuming till the contrary appears that the house committee will use it with due respect to the medical attendants of patients admitted and to their own staff.

S. A. H. T.—Our correspondent is advised to apply to "The Secretary, College of Preceptors, Bloomsbury-square, W.C." Much information of interest to medical students will be found in the Students' Number of THE LANCET, Sept. 1st, 1894, and in the number which we shall publish on Sept. 7th of the present year.

"A BOOK ON TOBACCO."

To the Editors of THE LANCET.

SIRS,—In reference to a query as to a book on tobacco I would recommend Mr. Ludwig Kohn to consult an article on smoking which appears in a work published many years ago on "Diseases of Modern Life," by Dr. Benjamin Ward Richardson.

I am, Sirs, yours truly,

July 1st, 1895. S. WESLEY WILSON.

To the Editors of THE LANCET.

SIRS,—In reply to Mr. Ludwig Kohn, in your issue of June 29th, will you allow me to inform him and others that a book upon the above subject, entitled "The Use of Tobacco condemned by Physicians, Experience, Common Sense, and the Bible"; also tracts, pamphlets, &c. may be obtained from this office? The price of the above book is 2*s.* 3*d.* cloth and 1*s.* 2*d.* paper covers.

I remain, Sirs, yours respectfully,

Manchester, July 1st, 1895. JAMES B. DAVIS.

**** Mr. Davis is secretary of the English Anti-Tobacco Society (Offices: 25, Market-street, Manchester), so that it is fair to suppose that the properties of tobacco are discussed from an antagonistic standpoint.—ED. L.

W. H. S.—Our correspondent cannot have told us all, though he may have told us all that he knows. From his account the conduct of a fellow practitioner would be "without known parallel," but the second opinion must have been sought by somebody. It could not have been given in the manner described *against* the wishes of the patient and her husband. We can express no opinion on the matter from the information supplied to us.

A QUESTION OF RESPONSIBILITY.

To the Editors of THE LANCET.

SIRS,—Kindly give your opinion on the following. A is paid a fixed yearly sum to attend accidents at D's factory. An accident takes place during A's absence and the patient is brought to B. B does everything necessary and tells patient to see A. A says he cannot remunerate B for his services. D considers himself relieved by salary he gives A. Who is responsible for B's fee?—I am, Sirs, yours truly,

July 1st, 1895. PERPLEXED.

**** If A did not actually delegate B to do a portion of his work for him, it would seem that A has incurred no legal responsibility. On the other hand, D's attitude is very comprehensible. Yet B must be paid. The responsibility will, we think, depend upon the circumstances of the case under which B's services were invited. Who sent for him, and how urgent was the case?—ED. L.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

During the week marked copies of the following newspapers have been received:—*Leicester Post, Sussex Daily News, Glasgow Evening Mail, Morning Leader, Liverpool Courier, Weekly Budget, North British Daily Mail, Science Siftings, Manchester Guardian, Scotsman, Gray's Standard, Brisbane Courier, Cheltenham Free Press, Yorkshire Herald, Bradford Observer, Remarks, West London Observer, Irish Times, Newcastle Chronicle, Wolverhampton Chronicle, Cork Constitution, Truth, Public Opinion, Family Doctor, Times of India, Pioneer Mail, Architect, Sanitary Record, City Press, Builder, Brighton Gazette, Kensington News, Liverpool Daily Post, Bristol Mercury, Madagascar News, West Middlesex Standard, Yorkshire Post, Hertfordshire Mercury, Leeds Mercury, Weekly Free Press and Aberdeen Herald, Mining Journal, Reading Mercury, Weekly Times and Echo, Surrey Advertiser, Spalding Free Press, Local Government Journal, Temperance Chronicle, English Mechanic, London, Manchester Courier, Nottingham Daily Express, Tottenham Standard, Coventry Herald, Australian Medical Journal, Public Health, Evening Telegraph (Dundee), Cheltenham Mercury, Goole Times, Brighton Guardian, &c., &c.*

Communications, Letters &c. have been received from—

A.—Dr. F. H. Alderson, Lond.; Dr. C. Aymer, Leslie, Fife; Dr. H. H. Aitchison, Wallsend-on-Tyne; Herr H. Audover, Bremenhaven; Ango-Swiss Condensed Milk Co., Lond.; Apollinaris Co., Lond.; American Academy of Medicine, Secretary of; Apothecaries' Hall, Lond., Secretary of; A. B. C., Lond.

B.—Dr. Lauder Brunton, Lond.; Dr. J. Braithwaite, Leeds; Dr. P. Boobbyer, Nottingham; Dr. C. Bodon, Paris; Dr. J. L. Bell, Driffield; Mr. C. Birchall, Liverpool; Mr. D. Biddle, Kingston-on-Thames; Mr. R. J. Beevor, Lond.; Messrs. Blondeau et Cie., Lond.; Messrs. Burgoyne, Burbidges, and Co., Lond.; Bootle Borough Hospital, Clerk of; Beta, Lond.; B. F. K., Lond.

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N.—Nottingham General Hospital, Secretary of.

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Letters, each with enclosure, are also acknowledged from—

A.—Dr. J. Appleyard, Manningham; Dr. E. Antrobus, Great Malvern; Agricola, Blackburn; Aseptic, Lond.

B.—Dr. J. M. Barbour, Lond.; Mr. W. Burton, Ramsgate; Mr. H. Barrett, Lond.; Mr. R. Baker, Lond.; Mr. J. W. Blampied, St. Lawrence, Jersey; Mr. J. G. Bride, Lond.; Beta, Lond.; B., Lond.

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R.—Dr. J. C. Rossie, Dumfries; Dr. A. J. M. Routh, Lond.; Mr. R. Robinson, Birmingham; Mr. R. Redpath, Newcastle-on-Tyne; Mr. C. Robertson, Port Alfred, Cape Colony; Mr. A. Roche, Dublin; R. L. S., Lond.; Runcorn, Cheshire (The Nook); Russell, Lond.; R. A., Lond.

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W.—Dr. R. J. Wylie, Totnes; Dr. H. W. Wise, Poynton; Dr. W. Winslow, Watlington; Dr. J. R. Woodcock, Boston Spa; Dr. R. L. Wood, Newbridge; Dr. J. E. Webb, Liskeard; Mr. H. W. Walker, Sketty; Mr. J. F. Walker, Swallowfield; Mr. J. W. Walker, Wakefield; W. E. H.

X.—Doctor X., Lond.

Z.—Dr. J. Zulll, Kincardine-on-Forth; Z., Lond.

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An original and novel feature of "THE LANCET General Advertiser" is a special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice, but is in itself an *additional* advertisement.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance

Answers are now received at this Office, by special arrangement, to Advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials &c. sent to the Office in reply to advertisements; copies only should be forwarded.

Terms for Serial Insertions may be obtained of the Manager, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER, 8, Rue Traversière, Asnières, Paris.